

BOARD OF
DIRECTORS, 1947

Walter R. G. Baker
President

Noel Ashbridge
Vice-President

Raymond F. Guy
Treasurer

Haraden Pratt
Secretary

Alfred N. Goldsmith
Editor

William L. Everitt
Senior Past President

Frederick B. Llewellyn
Junior Past President

1945-1947

Stuart L. Bailey
Keith Henney
B. E. Shackelford

1946-1948

Virgil M. Graham
Donald B. Sinclair

1947-1949

Murray G. Crosby
Raymond A. Heising

1947

J. E. Brown
Frederick R. Lack
Jack R. Poppele
David Smith
William C. White

•
Harold R. Zeamans
General Counsel

•
George W. Bailey
Executive Secretary

Laurence G. Cumming
Technical Secretary

•
BOARD OF EDITORS
Alfred N. Goldsmith
Chairman

•
PAPERS REVIEW
COMMITTEE
Murray G. Crosby
Chairman

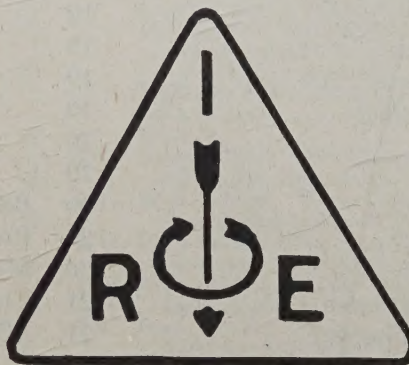
•
PAPERS
PROCUREMENT
COMMITTEE
Dorman D. Israel
General Chairman

PROCEEDINGS OF THE I.R.E.

(Including WAVES AND ELECTRONS Section)

Published Monthly by
The Institute of Radio Engineers, Inc.

Index to Volume 35—1947



Editorial Department

Alfred N. Goldsmith, Editor

Clinton B. DeSoto
Technical Editor

Mary L. Potter
Assistant Editor

William C. Copp
Advertising Manager

Lillian Petranek
Assistant Advertising Manager

The Institute of Radio Engineers, Inc.
1 East 79 Street
New York 21, N.Y.

Copyright, 1947, by The Institute of Radio Engineers, Inc. E

U OF I
LIBRARY

NOTE

The Journal of The Institute of Radio Engineers is officially known as the PROCEEDINGS OF THE I.R.E. The WAVES AND ELECTRONS section is to be regarded solely as a portion thereof, and not as a separate publication.

TABLE OF CONTENTS

General Information.....	Cover II	Contents of Volume 35 (continued)	
Contents of Volume 35.....	1	Nontechnical Index (continued)	
Chronological Listing.....	1	Laboratories.....	21
Index to Book Reviews.....	8	Minutes of Technical Meetings.....	21
Index to Authors.....	8	I.R.E. People.....	21
Index to Subjects.....	10	Miscellaneous.....	22
Nontechnical Index.....	19	Obituaries.....	22
Awards.....	19	Report of Secretary—1946.....	22
Committees.....	19	Representatives in Colleges.....	22
Constitution and Bylaws.....	19	Representatives on Other Bodies.....	22
Conventions and Meetings.....	19	Sections.....	22
Editorials.....	20	Standards—I.R.E.....	22
Election of Officers.....	20	Write-Ups.....	22
Front Covers.....	20	Back Copies.....	Cover III
Frontispieces.....	20	Proceedings Binders.....	Cover III
Group Photographs.....	20	Membership Emblems.....	Cover III
Industrial Engineering Notes.....	21	Current I.R.E. Standards.....	Cover IV
Institute of Radio Engineers.....	21	ASA Standards (Sponsored by the I.R.E)...	Cover IV

GENERAL INFORMATION

The Institute

The Institute of Radio Engineers serves those interested in radio and allied electronics and electrical-communication fields through the presentation and publication of technical material.

Membership has grown from a few dozen in 1912 to more than twenty thousand. There are several grades of membership, depending on the qualifications of the applicant, with dues ranging from \$3.00 per year for Students to \$15.00 per year for Members, Senior Members, Fellows, and Associates of more than five years' standing.

The PROCEEDINGS is sent to members of record on the date of publication. Standards Bulletins, as listed on Cover IV, are in stock and are available for those who wish to buy them at the cost shown opposite the name of the Standard.

The PROCEEDINGS

The PROCEEDINGS has been published without interruption from 1913 when the first issue appeared. Nearly 3000 technical contributions have been included in its pages and portray a currently written history of developments in both theory and practice. The contents of

every paper published in the PROCEEDINGS are the responsibility of the author and are not binding on the Institute or its members. Text material appearing in the PROCEEDINGS may be reprinted or abstracted in other publications on the express condition that specific reference shall be made to its original appearance in the PROCEEDINGS. Illustrations of any variety may not be reproduced, however, without specific permission from the Institute.

The first issue of the PROCEEDINGS was published in 1913. Volumes 1, 2, and 3 comprise four issues each. Volume 4 through volume 14 contain six numbers each, and each succeeding volume is made up of twelve issues.

In 1939, the name of the PROCEEDINGS of The Institute of Radio Engineers was changed to the PROCEEDINGS OF THE I.R.E. and the size of the magazine was enlarged from six by nine inches to eight and one-half by eleven inches.

Subscriptions

Annual subscription rates for the United States of America, its possessions, and Canada, \$12.00; to college and public libraries when ordering direct, \$9.00. Other countries, \$1.00 additional for postage.

Contents of Volume 35—1947

Volume 35, Number 1, January, 1947

PROCEEDINGS OF THE I.R.E.

Cumulative Index Number	Page
The Human Factor in Machine Operation, <i>S. S. Stevens</i>	2
Walter R. G. Baker, President-Elect, 1947	3
2717. The Maximum Range of a Radar Set, <i>Kennih A. Norton</i> and <i>Arthur C. Omberg</i>	4
2718. A New System of Frequency Modulation, <i>Robert Adler</i>	25
2719. A Note on Noise and Conversion-Gain Measurements, <i>William M. Breazeale</i>	31
2720. Transit-Time Effects in Ultra-High-Frequency Class-C Operation, <i>W. G. Dow</i>	35
2721. Discussion on "Current and Power in Velocity-Modulation Tubes," (August, 1944, pp. 477-482); <i>P. J. Wal- lis, S. G. Tomlin, L. J. Black, and P. L. Morton</i>	43
2722. Discussion on "Transmission of Television Sound on the Picture Carrier," by <i>Gordon L. Fredendall, Kurt Schle- singer, and A. C. Schroeder</i> , (February, 1946, pp. 49- 61); <i>E. R. Kretzmer and Gordon L. Fredendall</i>	46
Contributors to PROCEEDINGS OF THE I.R.E.	47
2723. Correspondence: "Cathode-Coupled Triode Amplifiers," by <i>Sziklai and Schroeder, N. I. Korman</i>	48
2724. Correspondence: "Note on the Expression for Mutual Impedance of Parallel Half-Wave Dipoles," <i>Kosmo J. Afanasiev</i>	48
1947 Convention News: Exhibits to be Held at the Grand Central Palace	49
2721. Book Review: "Piezoelectricity," by <i>Walter G. Cady</i> (Re- viewed by <i>J. K. Clapp</i>)	51
2722. Book Review: "Reference Data for Radio Engineers" (Reviewed by <i>Frederick W. Grover</i>)	51
2723. Book Review: "Radio's Conquest of Space," by <i>Donald McNicol</i> (Reviewed by <i>Lloyd Espenschied</i>)	51
2724. Book Review: "Der frequenzstabile Schwingtopf-Gener- ator," by <i>Arnold Braun</i> , and "Über Frequenzmodu- latoren für Ultrahochfrequenz," by <i>Georg Weber</i> (Re- viewed by <i>Han K. Jenny</i>)	52
2725. Book Review: "Capacitors," by <i>M. Brotherton</i> (Reviewed by <i>H. C. Forbes</i>)	52
I.R.E. People	53
Sections	54

WAVES AND ELECTRONS SECTION

S. H. Van Wambeck, Chairman, St. Louis Section and R. L. Coe, Vice-Chairman, St. Louis Section	56
General Electric "Electronics Park"	57
2726. Reports of the Committee on Professional Recognition on Collective Bargaining for Engineers	58
2727. Report on Professional Standing to the Canadian Coun- cil of The Institute of Radio Engineers	61
2728. Two Multichannel Microwave Relay Equipments for the United States Army Communication Network, <i>Ray- mond E. Lacy</i>	65
2729. Capacitance-Coupled Intermediate-Frequency Ampli- fiers, <i>Merwin J. Larsen and Lynn L. Merrill</i>	71
2730. Factors Affecting the Accuracy of Radio Noise Meters, <i>Harold E. Dinger and Harold G. Paine</i>	75
2731. A Wide-Tuning-Range Microwave Oscillator Tube, <i>John W. Clark and Arthur L. Samuel</i>	81
2732. A Coaxial-Type Water Load and Associated Power- Measuring Apparatus, <i>R. C. Shaw and R. J. Kircher</i>	84
Contributors to WAVES AND ELECTRONS SECTION	88
2733. Abstracts and References	90

Volume 35, Number 2, February, 1947

PROCEEDINGS OF THE I.R.E.

Thomas A. Edison, <i>Donald McNicol</i>	106
Radio's Contribution to International Understanding, <i>David Sarnoff</i>	107
2734. Traveling-Wave Tubes, <i>J. R. Pierce and Lester M. Field</i>	108
2735. Theory of the Beam-Type Traveling-Wave Tube, <i>J. R. Pierce</i>	111
Correction to "Engineering Societies Council"	123
2736. The Traveling-Wave Tube as Amplifier at Microwaves, <i>Rudolf Kompfner</i>	124
2737. Very-High-Frequency and Ultra-High-Frequency Signal Ranges as Limited by Noise and Co-channel Interfer- ence, <i>Edward W. Allen, Jr.</i>	128
2737. Discussion on "Very-High-Frequency and Ultra-High- Frequency Signal Ranges as Limited by Noise and Co-channel Interference," by <i>E. W. Allen, Jr.</i> , and <i>K. A. Norton</i> , (Winter Meeting I.R.E., January	

Volume 35, Number 2, February, 1947 (Cont'd.)

Cumulative Index Number	Page
1945); <i>C. M. Jansky, Edwin H. Armstrong, C. W. Carnahan, J. E. Brown, Paul A. de Mars, Dale Pol- lack, and E. W. Allen, Jr.</i>	136
2738. Field Intensities Beyond Line of Sight at 45.5 and 91 Megacycles, <i>C. W. Carnahan, Nathan W. Aram, and Edward F. Classen, Jr.</i>	152
2739. Directional Couplers, <i>W. W. Mumford</i>	160
2740. Transition Time and Pass Band, <i>C. C. Eaglesfield</i>	166
2528. Discussion on "Some Considerations Concerning the In- ternal Impedance of the Cathode Follower," by <i>Harold Goldberg</i> , (November, 1945, pp. 778-782); <i>Jack Avins, V. R. Briggs, and Harold Goldberg</i>	168
2741. Correspondence: "Electrical Circuit Analysis Applied to Servo Problems," <i>W. G. Hoyle</i>	169
2742. Correspondence: "Matching Conditions in a Stub-Tuned Transmission Line," <i>Philip Parzen</i>	170
Contributors to PROCEEDINGS OF THE I.R.E.	170
1947 National Convention	172
Summaries of Technical Papers	173
Committee Meetings	184
Rochester Fall Meeting	185
I.R.E. People	186
Sections	188
2743. Book Review: "Communication Through the Ages," by <i>Alfred Still</i> (Reviewed by <i>Donald McNicol</i>)	188
2744. Book Review: "Radio Tube Vade-Mecum," by <i>P. H. Brans</i> (Reviewed by <i>R. S. Burnap</i>)	188
2745. Book Review: "Two-Way Radio," by <i>Samuel Freedman</i> (Reviewed by <i>Ralph R. Batchler</i>)	189
2746. Book Review: "Radar—What It Is," by <i>John F. Rider</i> and <i>G. C. Baxter Rowe</i> (Reviewed by <i>Robert M. Page</i>)	190
2747. Book Review: "Electrical Engineering," by <i>Fred H. Pumphrey</i> (Reviewed by <i>Frederick W. Grover</i>)	190
2748. Book Review: "Personality and English in Technical Personnel," by <i>Philip B. McDonald</i> (Reviewed by <i>Donald McNicol</i>)	190

WAVES AND ELECTRONS SECTION

Theodore A. Hunter, Chairman, Cedar Rapids Section, 1946-1947	193
A National Research and Standardizing Laboratory	194
2749. Radar Development in Canada, <i>Frederick H. Sanders</i>	195
2750. Design of Communication Receivers for the Naval Serv- ice with Particular Consideration to the Very-High- Frequency and Ultra-High-Frequency Ranges, <i>Thomas McL. Davis and Emerick Toth</i>	201
2751. An Automatic-Slideback Peak Voltmeter for Measuring Pulses, <i>Cyrus J. Creveling and Leonard Mautner</i>	208
2752. An Attenuator of "S"-Band Energy, <i>Harry R. Meahl</i>	211
2753. Some Notes on the Copper-Oxide Rectifier and the Thermionic Tube in the Voltage-Doubling Circuit, <i>Ronald R. Gilmour</i>	213
Contributors to WAVES AND ELECTRONS SECTION	217
2754. Abstracts and References	219

Volume 35, Number 3, March, 1947

PROCEEDINGS OF THE I.R.E.

George T. Royden, Board of Directors, 1946	234
Proper Presentation of Papers Before Technical Meetings, <i>Arthur C. Downes</i>	235
2755. A High-Intensity Source of Long-Wavelength X Rays, <i>T. H. Rogers</i>	236
2756. The Maximum Efficiency of Reflex-Klystron Oscillators, <i>Ernest G. Linder and Robert L. Sproull</i>	241
2757. Electronic Collisional Frequency in the Upper Atmos- phere, <i>E. F. George</i>	249
2758. Noise Spectrum of Crystal Rectifiers, <i>P. H. Miller, Jr.</i>	252
2759. Some Considerations Governing Noise Measurements on Crystal Mixers, <i>Shepard Roberts</i>	257
2560. Graphical Analysis of Cathode-Biased Degenerative Amplifiers, <i>William A. Huber</i>	265
2462. Correction to "The Compensated-Loop Direction Finder," by <i>F. E. Terman and J. M. Pettit</i>	269
2761. An Approximate Theory of Eddy-Current Loss in Trans- former Cores Excited by Sine Wave or by Random Noise, <i>David Middleton</i>	270
2542. Discussion on "Concerning Hallén's Integral Equation for Cylindrical Antennas," by <i>S. A. Schelkunoff</i> , (Sep- tember, 1941, pp. 493-520), <i>Sandford Hershfield, and Ronald King</i>	282

2762. Correspondence: "A New Source of Systematic Error in Radio Navigation Systems Requiring the Measurement of the Relative Phases of the Propagated Waves," <i>Kenneth A. Norton</i>	284
2763. Correspondence: "On the Resonant Frequencies of <i>n</i> -Meshed Tuned Circuits," <i>Philip Parzen</i>	284
Contributors to PROCEEDINGS OF THE I.R.E.....	285
Fiscal Matters of Interest to I.R.E. Membership.....	287
I.R.E. People.....	289
Sections.....	290

WAVES AND ELECTRONS SECTION

Joseph T. Cimorelli, Chairman, New York Section—1947 P.I.C.A.O. and the Radio Engineer, <i>D. W. R. McKinley</i>	293
2764. Electron Tubes in World War II, <i>John E. Gorham</i>	295
2765. Specification and Measurement of Receiver Sensitivity at Higher Frequencies, <i>Joseph M. Pettit</i>	302
2766. Balanced Amplifiers, <i>Franklin F. Offner</i>	306
2767. Test Equipment and Techniques for Airborne-Radar Field Maintenance, <i>E. A. Blasi and Gerald C. Schutz</i> ..	310
Contributors to WAVES AND ELECTRONS SECTION.....	321
2768. Abstracts and References.....	322

Volume 35, Number 4, April, 1947

PROCEEDINGS OF THE I.R.E.

First Board of Directors Meeting in the New Institute Headquarters.....	338
The Engineer and Science Legislation, <i>Robert W. King</i> ..	339
2769. Considerations in the Design of Centimeter-Wave Radar Receivers, <i>Stewart E. Miller</i>	340
2770. Attenuation of 1.25-Centimeter Radiation Through Rain, <i>Lloyd J. Anderson, John P. Day, Clemens H. Freres, and Alfred P. D. Stokes</i>	351
2771. Q Circles—A Means of Analysis of Resonant Microwave Systems—Part I, <i>William Altar</i>	355
2772. A Tunable Squirrel-Cage Magnetron—The Donutron, <i>F. H. Crawford and Milton D. Hare</i>	361
2773. Space-Current Division in the Power Tetrode, <i>Clifford M. Wallis</i>	369
2499. Correspondence: "Acoustic Preferences of Listeners," <i>Lawrence V. Wells</i>	378
2499. Correspondence: "Tonal-Range and Sound-Intensity Preferences of Broadcast Listeners," <i>Ted Powell</i>	378
2670. Correspondence: "Contributions to Wave-Guide Theory" <i>John W. Miles</i>	378
Contributors to PROCEEDINGS OF THE I.R.E.....	379
Constitutional Revision.....	381
I.R.E. Awards.....	382
New England Radio Engineering Meeting.....	386
Sections.....	389
Spring Technical Conference Cincinnati Section I.R.E....	389
I.R.E. People.....	390
2774. Book Review: "Electrical Transmission in Steady State," by <i>Paul J. Selgin</i> (Reviewed by <i>C. E. Kilgour</i>).....	395
2775. Book Review: "The Electronic Control Handbook," by <i>Ralph R. Batcher and William Moulic</i> (Reviewed by <i>W. D. Cockrell</i>).....	395
2776. Book Review: "Principles of Radar (Second Edition)," by Radar School of M.I.T. (Reviewed by <i>E. K. Stodola</i>).....	395

WAVES AND ELECTRONS SECTION

Donald W. R. McKinley, Chairman, Ottawa Section—1947.....	397
Active Participation versus Passive Activity, <i>David J. Knowles</i>	398
2777. Radio Progress During 1946.....	399
2778. Abstracts and References.....	426

Volume 35, Number 5, May, 1947

PROCEEDINGS OF THE I.R.E.

Sections Representatives, 1947 National Convention..	442
The Position of the Engineer in Our Postwar Society, <i>Dorman D. Israel</i>	443
2779. Analysis of Problems in Dynamics by Electronic Circuits, <i>John R. Ragazzini, Robert H. Randall, and Frederick A. Russell</i>	444
2780. Wave Theoretical Interpretation of Propagation of 10-Centimeter and 3-Centimeter Waves in Low-Level Ocean Ducts, <i>C. L. Pekeris</i>	453
2781. Microwave Oscillators Using Disk-Seal Tubes, <i>A. M. Gurewitsch and J. R. Whinnery</i>	462
2782. Microwave Omnidirectional Antennas, <i>Henry J. Riblet</i> ..	474

2783. Q Circles—A Means of Analysis of Resonant Microwave Systems Part II, <i>William Altar</i>	478
2784. Characteristics of Certain Voltage-Regulator Tubes, <i>George M. Kirkpatrick</i>	485
2625. Discussion on "A Current Distribution for Broadside Arrays Which Optimizes the Relationship Between Beam Width and Side-Lobe Level," by <i>C. L. Dolph</i> , (June, 1946, pp. 335-348); <i>Henry J. Riblet and C. L. Dolph</i> ...	489
2785. Correspondence: "Empirical Formula for Amplification Factor," <i>E. W. Herold</i>	493
2786. Correspondence: "Note on the Sporadic-E layer," <i>Oliver P. Ferrell</i>	493
2787. Correspondence: "A Vacuum Heating Element," <i>Gerhard S. Lewin</i>	494
2788. Correspondence: "Radar Reflections from the Lower Atmosphere," <i>H. T. Friis</i>	494
2499. Correspondence: "Distortion and Acoustic Preferences," <i>James Moir</i>	495
Contributors to PROCEEDINGS OF THE I.R.E.....	496
Institute News and Radio Notes.....	498
1947 I.R.E. National Convention.....	499
I.R.E. People.....	503
Sections.....	505
2789. Book Review: "Introduction to Electron Optics," by <i>V. E. Cosslett</i> (Reviewed by <i>V. K. Zworykin</i>).....	506

WAVES AND ELECTRONS SECTION

David J. Knowles, Secretary-Treasurer, Emporium Section—1946.....	507
The Need for Clear Terminology, <i>Milton B. Sleeper</i> ...	508
2790. Impedance Measurement on Transmission Lines, <i>D. D. King</i>	509
2791. Microwave Power Measurement, <i>Theodore Moreno and Oscar C. Lundstrom</i>	514
2792. Design Values for Loop-Antenna Input Circuits, <i>Jay E. Browder and Victor J. Young</i>	519
2793. Radio Control of Model Flying Boats, <i>V. Welge</i>	526
Contributors to WAVES AND ELECTRONS SECTION.....	530
2794. Abstracts and References.....	532

Volume 35, Number 6, June, 1947

PROCEEDINGS OF THE I.R.E.

J. E. Brown, Board of Directors, 1947.....	546
Radio Jargon, <i>H. F. Smith</i>	547
The Generation of Centimeter Waves, <i>H. D. Hagstrum</i> ..	548
2796. Selective Demodulation, <i>Donald B. Harris</i>	565
2797. Input Admittance of Cathode-Follower Amplifiers, <i>Herbert J. Reich</i>	573
2798. An Exponential Transmission Line Employing Straight Conductors, <i>Wilbur N. Christiansen</i>	576
2651. Correspondence: "Magnetic-Wire Response," <i>Edgar Reich</i>	581
2651. Correspondence: "Demagnetizing Coefficient," <i>R. E. Burgess</i>	581
Contributors to PROCEEDINGS OF THE I.R.E.....	582
Report of the Secretary—1946.....	583
Chicago I.R.E. Conference, April 19, 1947.....	588
I.R.E. People.....	590
Minutes of Technical Committee Meetings.....	591
Sections.....	594

WAVES AND ELECTRONS SECTION

Lawrence R. Quarles, Chairman, North Carolina-Virginia Section.....	596
The Industrial Scientist as Citizen, <i>John Mills</i>	597
2799. The Job Ahead, <i>Charles R. Denny</i>	598
2800. A Technical Audit, <i>W. R. G. Baker</i>	599
2801. One-Millionth-Second Radiography and Its Applications, <i>Charles M. Slack and Donald C. Dickson, Jr.</i>	600
2802. Exact Design and Analysis of Double- and Triple-Tuned Band-Pass Amplifiers, <i>Milton Dishal</i>	606
Contributors to WAVES AND ELECTRONS SECTION.....	626
2803. Abstracts and References.....	627

Volume 35, Number 7, July, 1947

PROCEEDINGS OF THE I.R.E.

Lee de Forest, Pioneer and Benefactor of Radio.....	642
Twelve Good Men and True, <i>Keith Henney</i>	643
2804. Frequency Modulation and Control by Electron Beams, <i>Lloyd P. Smith and Carl I. Shulman</i>	644
2805. A Frequency-Modulated Magnetron for Super-High-Frequencies, <i>G. R. Kilgore, Carl I. Shulman, and J. Kurshan</i>	657

Cumulative Index Number	Page
2806. A 1-Kilowatt Frequency-Modulated Magnetron for 900 Megacycles, <i>J. S. Donal, Jr., R. R. Bush, C. L. Cuccia, and H. R. Hegbar</i>	664
2807. Propagation Studies on 45.1, 474, and 2800 Megacycles Within and Beyond the Horizon, <i>G. S. Wickizer and A. M. Braaten</i>	670
2808. Generalized Theory of Multitone Amplitude and Frequency Modulation, <i>Lawrence J. Giacoletto</i>	680
2578. Correction to "Analysis of a Resistance-Capacitance Parallel-T Network and Applications," by <i>A. E. Hastings</i>	694
2685. Correspondence: "Cathode-Follower Circuit," <i>Herbert L. Krauss</i>	694
2809. Correspondence: "Proposed Constitutional Amendments," <i>Karl G. Jansky and Frank R. Stansel</i>	695
2810. Correspondence: "Engineering Education," <i>W. J. Creamer</i>	695
Contributors to PROCEEDINGS OF THE I.R.E.....	696
Technical Committee Meetings.....	699
Broadcast Engineers Conference.....	701
Institute Committees—1947.....	702
Sections.....	705
2811. Book Review: "Television Receiving Equipment," by <i>W. T. Cocking</i> (Reviewed by <i>Donald G. Fink</i>).....	706
2812. Book Review: "Directional Antennas," by <i>Carl E. Smith</i> (Reviewed by <i>John D. Kraus</i>).....	706
2813. Book Review: "Photoelectric Cells," by <i>A. Sommer</i> (Reviewed by <i>V. K. Zworykin</i>).....	706
2814. Book Review: "The Theory of Mathematical Machines," by <i>Francis J. Murray</i> (Reviewed by <i>John R. Ragazzini</i>).....	707
2815. Book Review: "Fundamentals of Industrial Electronic Circuits," by <i>Walter Richter</i> (Reviewed by <i>A. P. Upton</i>).....	707
2816. Book Review: "The Radio Amateur's Handbook," by the Headquarters Staff of the American Radio Relay League (Reviewed by <i>Harold A. Wheeler</i>).....	707
2817. Book Review: "The Engineer in Society," by <i>John Mills</i> , (Reviewed by <i>W. L. Everitt</i>).....	707
2818. Book Review: "Electronics for Industry," by <i>Waldemar I. Bendz</i> , Assisted by <i>Charles A. Scarlott</i> (Reviewed by <i>Alan M. Glover</i>).....	708
2819. Book Review: "Servomechanism Fundamentals," by <i>Henri Lauer, Robert Lesnick, and Leslie E. Matson</i> (Reviewed by <i>P. Le Corbeiller</i>).....	708
2820. Book Review: "The Decibel Notation," by <i>V. V. L. Rao</i> (Reviewed by <i>Herman A. Affel</i>).....	708
I.R.E. People.....	709

WAVES AND ELECTRONS SECTION

Alois W. Graf, Chairman, Chicago Section, 1946–1947..	710
The Problem of a Scattered Membership, <i>Lawrence R. Quarles</i>	711
2821. Electronics in Submarine Warfare, <i>Charles A. Lockwood, Jr.</i>	712
2822. The Theory and Application of the Radar Beacon, <i>Ralph D. Hultgren and Ludlow B. Hallman, Jr.</i>	716
2823. Antenna Focal Devices for Parabolic Mirrors, <i>Grote Reber</i>	731
2824. Microwave Impedance-Plotting Device, <i>William Allar and J. W. Coltman</i>	734
Contributors to WAVES AND ELECTRONS SECTION.....	738
2825. Abstracts and References.....	739

Volume 35, Number 8, August, 1947

PROCEEDINGS OF THE I.R.E.

Sir Noel Ashbridge, Vice-President—1947.....	754
Importance of Proper Engineering Organization to Industry, <i>Lewis M. Clement</i>	755
2826. Electronic Computing Circuits of the ENIAC, <i>Arthur W. Burks</i>	756
2827. Automatic Frequency Control of Microwave Oscillators, <i>Vincent C. Rideout</i>	767
2828. Harmonic-Amplifier Design, <i>Robert H. Brown</i>	771
2829. Abstract of "A Method for Calculating Electric Field Strength in the Interference Region," <i>Homer E. Newell, Jr.</i>	777
2830. Electron Reflectors with a Quadratic Axial Potential Distribution, <i>J. M. Lafferty</i>	778
2831. Properties of Ridge Wave Guide, <i>Seymour B. Cohn</i>	783
2832. Artificial Electrical Twinning in Quartz Crystals, <i>Jan J. Vormer</i>	789
2471. Correspondence: "Image Formation in Cathode-Ray Tubes," <i>E. G. Ramberg and D. W. Epstein</i>	791

Cumulative Index Number	Page
2833. Correspondence: "Presentation of Technical Papers," <i>Harald Schults</i>	791
2670. Correspondence: "Equivalent Circuits for Plane Discontinuities," <i>John R. Whinnery and John W. Miles</i>	792
2565. Correspondence: "The Steady-State Operational Calculus," <i>A. Colino</i>	792
2834. Correspondence: "Nomogram for Rosa Inductance Correction," <i>S. Sabaroff</i>	793
Contributors to PROCEEDINGS OF THE I.R.E.....	793
West Coast I.R.E. Convention.....	796
New England Radio Engineering Meeting.....	799
Spring Technical Conference, Cincinnati.....	800
Minutes of Technical Committee Meetings.....	801
Sections.....	802
I.R.E. People.....	803
2835. Book Review: "Proceedings of the National Electronics Conference, Volume II," edited by <i>R. E. Beam</i> , Assisted by <i>R. R. Buss, T. J. Higgins, R. R. Johnson, E. W. Kimbark, A. H. Wing, Jr.</i> (Reviewed by <i>Keith Henney</i>).....	805
2836. Book Review: "The Physical Principles of Wave-Guide Transmission and Antenna Systems," by <i>W. H. Watson</i> (Reviewed by <i>L. J. Chu</i>).....	805
2837. Book Review: "Television Techniques," by <i>Hoyland Bettinger</i> (Reviewed by <i>O. B. Hanson</i>).....	805
2838. Book Review: "Guide to the Literature of Mathematics and Physics," by <i>Nathan Greer Parke III</i> (Reviewed by <i>Frederick W. Grover</i>).....	805
2839. Book Review: "An Introduction to Engineering Plastics," by <i>D. Warburton Brown and Wilbur T. Harris</i> (Reviewed by <i>John R. Townsend</i>).....	806
2840. Book Review: "Most-Often-Needed 1947 Radio Diagrams and Servicing Information," by <i>M. N. Beilman</i> (Reviewed by <i>L. M. Clement</i>).....	806
2841. Book Review: "Electric Contacts," by <i>Ragnar Holm</i> (Reviewed by <i>B. W. Jones</i>).....	806
2842. Book Review: "1945–1947 Post-War Automatic Record Changers and Servicing Information," by <i>M. N. Beilman</i> (Reviewed by <i>H. A. Chinn</i>).....	806

WAVES AND ELECTRONS SECTION

Officers—Philadelphia Section—May 1946–May 1947..	807
Evolution, <i>Alois W. Graf</i>	808
2843. Electronics at Peace, <i>W. R. G. Baker</i>	809
2844. A Test for a Successful Institute Section, <i>Frederick B. Llewellyn</i>	809
2845. Relation of the Engineering Profession to World Affairs, <i>C. B. Jolliffe</i>	810
2846. Magnetic Deflection of Kinescopes, <i>Kurt Schlesinger</i>	813
2847. Electronic Indicator for Low Audio Frequencies, <i>A. E. Hastings</i>	821
2848. A Coaxial Load for Ultra-High-Frequency Calorimeter Wattmeters, <i>William R. Rambo</i>	827
2849. Charts for Resonant Frequencies of Cavities, <i>R. N. Bracewell</i>	830
Contributors to WAVES AND ELECTRONS SECTION.....	841
2850. Abstracts and References.....	843

Volume 35, Number 9, September, 1947

PROCEEDINGS OF THE I.R.E.

J. R. Popple, Board of Directors, 1947.....	859
Science Legislation and National Progress, <i>Frederick Emmons Terman</i>	860
2851. An Experimental Simultaneous Color-Television System, Part I—Introduction, <i>R. D. Kell</i>	861
2852. Part II—Pickup Equipment, <i>G. C. Sziklai, R. C. Ballard, and A. C. Schroeder</i>	862
2853. Part III—Radio-Frequency and Reproducing Equipment, <i>K. R. Wendt, G. L. Fredendall, and A. C. Schroeder</i>	871
2854. Electrical Noise Generators, <i>J. D. Cobine and J. R. Curry</i>	875
2855. The Design of Speech Communication Systems, <i>Leo L. Beranek</i>	880
2856. 3- and 9-Centimeter Propagation in Low Ocean Ducts, <i>Martin Katzin, Robert W. Bauchman, and William Binnian</i>	891
2857. Broad-Band Noncontacting Short Circuits for Coaxial Lines. Part I.—TEM-Mode Characteristics, <i>William H. Huggins</i>	906
2858. Velocity-Modulated Reflex Oscillator, <i>J. M. Lafferty</i>	913
2859. Design of Simple Broad-Band Wave-Guide-to-Coaxial-Line Junctions, <i>Seymour B. Cohn</i>	920

2717. Discussion on "The Maximum Range of Radar Set" by Kenneth A. Norton and Arthur C. Omberg (January, 1947, pp. 4-24); Jerome Freedman and Kenneth A. Norton.....	927
2551. Discussion on "The Transverse Electric Modes in Coaxial Cavities," by Robert A. Kirkman and Morris Kline (January, 1946, pp. 14-17); William H. Huggins, Morris Kline, and Robert A. Kirkman.....	931
Contributors to PROCEEDINGS OF THE I.R.E.....	935
2860. Correspondence: "Report on Professional Standing to the Canadian Council," E. G. Cullwick.....	938
2762. Correspondence: "A Source of Error in Radio Navigation Systems which Depend on the Velocity of a 'Ground-Wave,'" J. A. Ratcliffe.....	938
A Statement to the Membership Concerning Publication Plans and Problems.....	939
Minutes of Institute Committee Meeting.....	939
Constitution.....	940
West Coast I.R.E. Convention.....	942
Industrial Engineering Notes.....	942
Sections.....	944
2861. Book Review: "Radar Engineering," by Donald G. Fink (Reviewed by Kenneth A. Norton).....	946
2862. Book Review: "Theory and Application of Radio-Frequency Heating," by George H. Brown, Cyril N. Hoyle, and Rudolph A. Bierwirth (Reviewed by T. P. Kinn).....	946
2863. Book Review: "Electricity—Principles, Practice, Experiments," by Charles S. Siskind (Reviewed by J. D. Ryder).....	946
2864. Book Review: "Standard FM Handbook," edited by Milton B. Sleeper (Reviewed by Murray G. Crosby).....	946
I.R.E. People.....	947

WAVES AND ELECTRONS SECTION

Officers, Princeton Subsection.....	949
Standards, A. B. Chamberlain.....	950
2865. Liberal Education for the Engineering Profession, H. S. Rogers.....	951
2866. Proposed Method of Rating Microphones and Loud Speakers for Systems Use, Frank F. Romanow and Melville S. Hawley.....	953
2867. Intermediate-Frequency Amplifiers for Frequency-Modulation Receivers, J. J. Adams.....	960
2868. A Microwave Frequency Standard, Richard G. Talpey and Harold Goldberg.....	965
2869. A Note on Coupling Transformers for Loop Antennas, M. J. Kobitsky.....	969
2870. A Resistance-Tuned Frequency-Modulated Oscillator for Audio-Frequency Applications, Henry S. McGaughan and Charles B. Leslie.....	974
2871. A Method for Calibrating Microwave Wavemeters, Lloyd E. Hunt.....	979
2872. A Method of Graphically Analyzing Cathode-Degenerated Amplifier Stages, E. M. Lonsdale and W. F. Main.....	981
Contributors to WAVES AND ELECTRONS SECTION.....	985
2873. Abstracts and References.....	987

Volume 35, Number 10, October, 1947

PROCEEDINGS OF THE I.R.E.

A Message to the I.R.E. Membership from Its Board of Directors, Walter R. G. Baker.....	1003
Murray G. Crosby, Board of Directors, 1947-1949.....	1004
2874. New Low-Coefficient Synthetic Piezoelectric Crystals for Use in Filters and Oscillators, W. P. Mason.....	1005
2875. Variation of Bandwidth with Modulation Index in Frequency Modulation, Murlan S. Corrington.....	1013
2876. The Influence of Amplitude Limiting and Frequency Selectivity upon the Performance of Radio Receivers in Noise, W. J. Cunningham, S. J. Goffard, and J. C. R. Licklider.....	1021
2877. Performance of Short Antennas, Carl E. Smith and Earl M. Johnson.....	1026
2878. Time Modulation, Britton Chance.....	1039
2879. Time Demodulation, Britton Chance.....	1045
2880. Analysis of Lengthening of Modulated Repetitive Pulses, S. C. Kleene.....	1049
2881. Abstract of "Recording of Sky-Wave Signals From Broadcast Stations," Wilbert B. Smith.....	1053
2882. Investigation of Frequency-Modulation Signal Interference, Igor Plusc.....	1054
2883. High-Frequency Excitation of Iron Cores, J. D. Cobine, J. R. Curry, Charles J. Gallagher, and Stanley Ruthberg.....	1060
2884. Wide-Range Double-Heterodyne Spectrum Analyzers, L. Apker, J. Kahnke, E. Taft, and R. Watters.....	1068

2885. The Behavior of "Magnetic" Electron Multipliers as a Function of Frequency, L. Maller.....	1074
2886. Transit-Time Effect in Klystron Gaps, H. B. Phillips and L. A. Ware.....	1076
2887. Broad-Band Wave-Guide Admittance Matching by Use of Irises, R. G. Fellers and R. T. Weidner.....	1080
2888. Broad-Band Noncontacting Short Circuits for Coaxial Lines. Part II—Parasitic Resonances in the Unslotted S-Type Plunger, W. H. Huggins.....	1085
2889. Microwave Antenna Analysis, Samuel Seely.....	1092
2890. Approximate Equivalent Circuit for a Resonator Transducer, William R. MacLean.....	1095
2626. Discussion on "High-Impedance Cable," by Heinz E. Kallman (June, 1946, pp. 348-351); M. R. Winkler, Heinz E. Kallman.....	1097
Contributors to PROCEEDINGS OF THE I.R.E.....	1100
2788. Correspondence: "Radar Reflections from the Lower Atmosphere," William B. Gould.....	1105
2577. Correspondence: "Network Transmission of a Frequency-Modulated Wave," L. J. Giacoletto.....	1105
Rochester Fall Meeting.....	1107
Industrial Engineering Notes.....	1108
Emporium Section Summer Seminar.....	1110
Minutes of Technical Committee Meetings.....	1111
Institute Committees—1947.....	1112
Sections.....	1115
2891. Book Review: "Television, Volume III (1938-1941) and Television, Volume IV (1942-1946)," edited by Alfred N. Goldsmith, Arthur F. Van Dyke, Robert S. Burnap, Edward T. Dickey, and George M. K. Baker (Reviewed by Lewis M. Clement).....	1116
2892. Book Review: "Writing the Technical Report" (New Second Edition), by J. Raleigh Nelson (Reviewed by R. S. Burnap).....	1116

WAVES AND ELECTRONS SECTION

Henry I. Metz, Chairman, Indianapolis Section, 1944-1947.....	1117
Government and Industry, George P. Adair.....	1118
2893. The Electronic Research Sponsored by the Office of Naval Research, E. R. Piore.....	1119
2894. Radio Propagation at Frequencies above 30 Megacycles. Kenneth Bullington.....	1122
2895. Wide-Range Ultra-High-Frequency Signal Generators.. A. V. Haef, T. E. Hanley, and C. B. Smith.....	1137
2896. Center-Frequency-Stabilized Frequency-Modulation System, E. M. Ostlund, A. R. Vallarino, and Martin Silver.....	1144
2897. Intermodulation Distortion Analysis as Applied to Disk Recording and Reproducing Equipment, H. E. Roys.....	1149
2898. A Wide-Band Transformer from an Unbalanced to a Balanced Line, Eugene G. Fubini and Peter J. Sutro.....	1153
2899. Electrode Dissipation at Ultra-High Frequencies, Zigmund W. Wichinsky.....	1155
2900. An Electron-Ray Tuning Indicator for Frequency Modulation, F. M. Bailey.....	1158
Contributors to WAVES AND ELECTRONS SECTION.....	1160
2901. Abstracts and References.....	1163

Volume 35, Number 11, November, 1947

PROCEEDINGS OF THE I.R.E.

Raymond A. Heising, Board of Directors—1947.....	1179
What's in a Technical Name, Duane Roller.....	1180
2902. Microwave Converters, C. F. Edwards.....	1181
2903. Fluctuation Noise in Pulse-Height Multiplex Radio Links, L. L. Rauch.....	1192
2904. Propagation of Radio Waves in the Lower Troposphere, J. B. Smyth and L. G. Trolese.....	1198
2905. The Determination of Ionospheric Electron Distribution, Lawrence A. Manning.....	1203
2906. Considerations in the Design of a Radar Intermediate-Frequency Amplifier, Andrew L. Hopper and Stuart E. Miller.....	1208
2907. Detectability and Discriminability of Targets on a Remote Projection Plan-Position Indicator, W. R. Garner and Ferdinand Hamburger.....	1220
2908. Testing Repeaters with Circulated Pulses, A. C. Beck and D. H. Ring.....	1226
2909. Distortion in Pulse-Duration Modulation, Ernest R. Kretzmer.....	1230
2910. A Method of Virtual Displacements for Electrical Systems with Applications to Pulse Transformers, Prescott D. Croul.....	1236
2911. Transadmittance and Input Conductance of a Light-house at 300 Megacycles, Norman T. Lavoo.....	1248

Cumulative Index Number	Page
2912. Cyclophon: A Multipurpose Electronic Commutator Tube, <i>D. D. Grieg, J. J. Glauber, and S. Moskowitz</i>	1251
2913. Video Storage by Secondary Emission from Simple Mosaics, <i>Robert A. McConnell</i>	1258
2914. Space-Charge and Transit-Time Effects on Signal and Noise in Microwave Tetrodes, <i>L. C. Peterson</i>	1264
2915. The Motion of Electrons Subject to Forces Transverse to a Uniform Magnetic Field, <i>Paul K. Weimer and Albert Rose</i>	1275
2916. An Oscillographic Method of Presenting Impedances on the Reflection-Coefficient Plane, <i>A. L. Samuel</i>	1279
2917. Parabolic-Antenna Design for Microwaves, <i>C. C. Cutler</i>	1284
2918. Hybrid Circuits for Microwaves, <i>W. A. Tyrrell</i>	1294
2919. A Mathematical Theory of Directional Couplers, <i>Henry J. Riblet</i>	1307
2920. The Equivalent Circuit of a Corner Bend in a Rectangular Wave Guide, <i>John W. Miles</i>	1313
2921. Microwave Filter Using Quarter-Wave Couplings, <i>R. M. Fano and A. W. Lawson</i>	1318
2922. Broad-Band Noncontacting Short Circuits for Coaxial Lines. Part III—Control of Parasitic Resonances in the S-Type Plunger, <i>William H. Huggins</i>	1324
Contributors to PROCEEDINGS OF THE I.R.E.	1328
2923. Correspondence: "Quantitative Radar Measurements," <i>Martin Katzin</i>	1333
2807. Correspondence: "Ultra-Short-Wave Propagation Studies Beyond the Horizon," <i>A. H. Waynick</i>	1334
2804. Correspondence: "Scalar and Vector Potential Treatment," <i>Paul I. Richards</i>	1334
2796. Correspondence: "Selective Demodulation," <i>B. Starniecki</i>	1335
2763. Correspondence: "Resonant Frequencies of <i>n</i> -Meshed Tuned Circuits," <i>Lotfi A. Zadeh</i>	1335
2662. Correspondence: "Nodal Method of Circuit Analysis," <i>Albert Preisman</i>	1335
2924. Correspondence: "Federal, Elwell, and Stone," <i>Ellery W. Stone</i>	1335
Industrial Engineering Notes	1337
2925. Book Review: "Klystron Tubes" by <i>A. E. Harrison</i> (Reviewed by <i>J. R. Whinnery</i>)	1339
2926. Book Review: "Antennae: An Introduction to Their Theory" by <i>J. Aharoni</i> (Reviewed by <i>S. A. Schelkunoff</i>)	1339
2927. Book Review: "Vector and Tensor Analysis" by <i>Louis Brand</i> (Reviewed by <i>Nathan Marcovitz</i>)	1339
2928. Book Review: "The Strange Story of the Quantum" by <i>Banesh Hoffman</i> (Reviewed by <i>William H. Crew</i>)	1340
2929. Book Review: "Electronic Engineering Patent Index, 1946" edited by <i>Frank A. Petraglia</i> (Reviewed by <i>Alois W. Graf</i>)	1340
Sections	1341
I.R.E. People	1342

WAVES AND ELECTRONS SECTION

John E. Keto, Chairman, Dayton Section—May 1946—May 1947	1344
Murray Hill Labs., Bell Telephone Laboratories	1345
2930. Post-War Curriculum Emphasis, <i>Otto J. M. Smith</i>	1346
2931. Dynamic Performance of Peek-Limiting Amplifiers, <i>Don E. Maxwell</i>	1349
2932. Radio Doppler for Aircraft Speed Measurements, <i>Leonard R. Malling</i>	1357
2933. Force at the Stylus Tip While Cutting Lacquer Disk-Recording Blanks, <i>H. E. Roys</i>	1360
2934. Coaxial-Cable Networks, <i>Frank A. Cowan</i>	1364
2935. Mutual Impedance Between Vertical Antennas of Unequal Heights, <i>C. Russell Cox</i>	1367
2936. A Wideband 550-Megacycle Amplifier, <i>Raymond O. Petrich</i>	1371
2937. Special Magnetic Amplifiers and Their Use in Computing Circuits, <i>H. S. Sack, R. T. Beyer, G. H. Miller, and J. W. Trischka</i>	1375
2938. Dimensional Analysis of Electromagnetic Equations, <i>A. M. Winzemer</i>	1383
Contributors to WAVES AND ELECTRONS SECTION	1384
2939. Abstracts and References	1387

Volume 35, Number 12, December, 1947

PROCEEDINGS OF THE I.R.E.

Dorman D. Israel	1403
Audio Aspects of Postwar Radio Engineering, <i>John H. Potts</i>	1404
2940. Frequency Stabilization of Microwave Oscillators, <i>R. V. Pound</i>	1405

Cumulative Index Number	Page
2941. Synchronization of Oscillators, <i>Robert D. Huntoon and A. Weiss</i>	1415
2942. Reflex Oscillators for Radar Systems, <i>J. O. McNally and W. G. Shepherd</i>	1424
2943. The Distortion of Frequency-Modulated Waves by Transmission Networks, <i>A. S. Gladwin</i>	1436
2944. A Study of Tropospheric Reception at 42.8 Mc. and Meteorological Conditions, <i>Greenleaf W. Pickard and Harlan T. Stetson</i>	1445
2945. Measurement of Aircraft-Antenna Patterns Using Models, <i>George Sinclair, E. C. Jordan, and Eric W. Vaughan</i>	1451
2946. Microwave Antenna Measurements, <i>C. C. Cutler, A. P. King, and W. E. Kock</i>	1462
2947. Slot Antennas, <i>N. E. Lindenblad</i>	1472
2948. Fundamental Limitations of Small Antennas, <i>Harold A. Wheeler</i>	1479
2949. A Helical Antenna for Circular Polarization, <i>Harold A. Wheeler</i>	1484
2950. An Adjustable Wave-Guide Phase Changer, <i>A. Gardner Fox</i>	1489
2951. Plane Discontinuities in Coaxial Lines, <i>John W. Miles</i>	1498
2952. The Inverse Nyquist Plane in Servomechanism Theory, <i>George B. Criss</i>	1503
2730. Discussion on "Factors Affecting the Accuracy of Radio Noise Meters" by <i>Harold E. Dinger and Harold G. Paine</i> (January, 1947, pp. 75-81); <i>Alan Watton, Jr., Harold E. Dinger, and Harold G. Paine</i>	1505
2802. Discussion on "Exact Design and Analysis of Double- and Triple-Tuned Band-Pass Amplifier," by <i>Milton Dishal</i> , (June, 1947, pp. 606-626); <i>Vernon D. Landon, and Milton Dishal</i>	1507
2632. Discussion on "The Cathode-Coupled Amplifier," by <i>Keats A. Pullen, Jr.</i> , (June, 1946, pp. 402-405); <i>John R. Clark, Adolf Reitlinger, and Keats A. Pullen</i>	1510
Contributors to PROCEEDINGS OF THE I.R.E.	1514
2953. Correspondence: "Multifrequency Bunching in Reflex Klystrons," <i>W. H. Huggins</i>	1518
2822. Correspondence: "Comparison of Primary and Secondary Radar System," <i>Maurice V. Gowdey</i>	1518
I.R.E. News and Notes	1519
Industrial Engineering Notes	1521
Sections	1525
I.R.E. People	1526
2954. Book Review: "Ultrahigh Frequency Transmission and Radiation," by <i>Nathan Marchand</i> (Reviewed by <i>Stanford Goldman</i>)	1528
2955. Book Review: "Theory and Application of Mathieu Functions," by <i>N. W. McLachlan</i> (Reviewed by <i>Walter C. Johnson</i>)	1528
2956. Book Review: "Mathematics for Radio Engineers," by <i>Leonard Mautner</i> (Reviewed by <i>John R. Ragazzini</i>)	1528
2957. Book Review: "Principles of Electrical Engineering," by <i>T. F. Wall</i> (Reviewed by <i>Frederick W. Grover</i>)	1528
2958. Book Review: "Electrical Engineering Problems and Their Solution," by <i>T. F. Wall</i> (Reviewed by <i>Frederick W. Grover</i>)	1529
2959. Book Review: "Television Primer of Production and Direction," by <i>Louis A. Sposa</i> (Reviewed by <i>Albert F. Murray</i>)	1529
2960. Book Review: "Getting a Job in Television," by <i>John Southwell</i> (Reviewed by <i>Donald K. Lippincott</i>)	1529
2961. Book Review: "Electronic Engineering Master Index, 1925-1945, and Electronic Engineering Master Index, 1946," edited by <i>Frank A. Petraglia</i> (Reviewed by <i>Laurens E. Whittemore</i>)	1529
RCA Laboratories, Research Headquarters	1530
Officers of Dallas—Ft. Worth Section, <i>R. A. Broding and J. G. Roundtree</i>	1531
2962. New Television Field-Pickup Equipment Employing the Image Orthicon, <i>John H. Roe</i>	1532
2963. New C.B.S. Program Transmission Standards, <i>Howard A. Chinn and Philip Eisenberg</i>	1547
2964. "Cloverleaf" Antenna for F.M. Broadcasting, <i>Philip H. Smith</i>	1556
2965. Theory and Design of Progressive and Ordinary Universal Winding, <i>Myron Kantor</i>	1563
2966. A Vacuum-Tube-Type Transducer for Use in the Reproduction of Lateral Phonograph Recordings, <i>James F. Gordon</i>	1571
2967. Field Measurements on Magnetic Recording Heads, <i>Donald L. Clark and Lyon L. Merrill</i>	1575
2968. Video Delay Lines, <i>J. P. Blewett and J. H. Rubel</i>	1580
Contributors to the WAVES AND ELECTRONS SECTION	1585
2969. Abstracts and References	1587

INDEX TO BOOK REVIEWS

- Antennae: An Introduction to Their Theory, by J. Aharoni (Reviewed by S. A. Schelkunoff): 2927
- Capacitors, by M. Brotherton (Reviewed by H. C. Forbes): 2725
- Communication Through the Ages, by Alfred Still (Reviewed by Donald McNicol): 2743
- Decibel Notation, by V. V. L. Rao (Reviewed by Herman A. Affel): 2820
- Der frequenzstabile Schwingtopf-Generator, by Arnold Braun (Reviewed by Hans K. Jenny): 2724
- Directional Antennas, by Carl E. Smith (Reviewed by John D. Kraus): 2812
- Electric Contacts, by Ragnar Holm (Reviewed by B. W. Jones): 2841
- Electrical Engineering, by Fred H. Pumphrey (Reviewed by Frederick W. Grover): 2747
- Electrical Engineering Problems and Their Solution, by T. F. Wall (Reviewed by Frederick W. Grover): 2958
- Electrical Transmission in Steady State, by Paul J. Selgin (Reviewed by C. E. Kilgour): 2774
- Electricity—Principles, Practice, Experiments, by Charles S. Siskind (Reviewed by J. D. Ryder): 2863
- Electronic Control Handbook, by Ralph R. Batcher and William Moulic (Reviewed by W. D. Cockrell): 2775
- Electronic Engineering Master Index, 1925–1945, and Electronic Engineering Master Index, 1946, edited by Frank A. Petraglia (Reviewed by Laurens E. Whittemore): 2961
- Electronic Engineering Patent Index, 1946, edited by Frank A. Petraglia (Reviewed by Alois W. Graf): 2930
- Electronics for Industry, by Waldemar I. Bendz, assisted by Charles A. Scarlott (Reviewed by Alan M. Glover): 2818
- Engineer in Society, by John Mills (Reviewed by W. L. Everitt): 2817
- Fundamentals of Industrial Electronic Circuits, by Walter Richter (Reviewed by A. P. Upton): 2815
- Getting a Job in Television, by John Southwell (Reviewed by Donald K. Lippincott): 2960
- Guide to the Literature of Mathematics and Physics, by Nathan Greer Parke III (Reviewed by Frederick W. Grover): 2838
- Introduction to Electron Optics, by V. E. Cosslett (Reviewed by V. K. Zworykin): 2789
- Introduction to Engineering Plastics, by D. Warburton Brown and Wilbert T. Harris (Reviewed by John R. Townsend): 2839
- Klystron Tubes, by A. E. Harrison (Reviewed by J. R. Whinnery): 2926
- Mathematics for Radio Engineers, by Leonard Mautner (Reviewed by John R. Ragazzini): 2956
- Most Often Needed 1947 Radio Diagrams and Servicing Information, compiled by M. N. Beitman (Reviewed by Lewis M. Clement): 2840
- Personality and English in Technical Personnel, by Philip B. McDonald (Reviewed by Donald McNicol): 2748
- Photoelectric Cells, by A. Sommer (Reviewed by V. K. Zworykin): 2813
- Physical Principles of Wave-Guide Transmission and Antenna Systems, by W. H. Watson (Reviewed by L. J. Chu): 2836
- Piezoelectricity, by Walter G. Cady (Reviewed by J. K. Clapp): 2721
- 1945–1947 Post-War Automatic Record Changers and Servicing Information, Compiled by M. N. Beitman (Reviewed by H. A. Chinn): 2842
- Principles of Electrical Engineering, by T. F. Wall (Reviewed by Frederick W. Grover): 2957
- Principles of Radar (Second Edition), by Members of the Staff of the Radar School, M.I.T. (Reviewed by E. K. Stodola): 2776
- Proceedings of the National Electronics Conference, Volume II, edited by R. E. Beam (Reviewed by Keith Henney): 2835
- Radar Engineering, by Donald G. Fink (Reviewed by Kenneth A. Norton): 2861
- Radar—What It Is, by John F. Rider and G. C. Baxter Rowe (Reviewed by Robert M. Page): 2746
- Radio Amateur's Handbook (Twenty Fourth Edition—1947), by the Headquarters Staff of the American Radio League (Reviewed by H. A. Wheeler): 2816
- Radio's Conquest of Space, by Donald McNicol (Reviewed by Lloyd Espenschied): 2723
- Radio Tube Vade-Mecum (1946), Sixth Edition, by P. H. Brans (Reviewed by R. S. Burnap): 2744
- Reference Data for Radio Engineers (Second Edition), edited by H. T. Kohlhaas (Reviewed by Frederick W. Grover): 2722
- Servomechanism Fundamentals, by Henri Lauer, Robert Lesnick, and Leslie E. Matson, Engineering Department, RCA Victor Division, Radio Corporation of America (Reviewed by P. Le Corbeiller): 2819
- Standard FM Handbook, edited by Milton B. Sleeper (Reviewed by Murray G. Crosby): 2864
- Strange Story of the Quantum, by Banesh Hoffmann (Reviewed by William H. Crew): 2929
- Television Primer of Production and Direction, by Louis A. Sposa (Reviewed by Albert F. Murray): 2959
- Television, Volume III (1938–1941), and Television, Volume IV (1942–1946), edited by Alfred N. Goldsmith, Arthur F. Van Dyck, Robert S. Burnap, Edward T. Dickey, and George M. K. Baker (Reviewed by Lewis M. Clement): 2891
- Television Receiving Equipment, by W. R. Cocking (Reviewed by Donald G. Fink): 2811
- Television Techniques, by Hoyland Bettinger (Reviewed by O. B. Hanson): 2837
- Theory and Application of Mathieu Functions, by N. W. McLachlan (Reviewed by Walter C. Johnson): 2955
- Theory and Application of Radio-Frequency Heating, by George H. Brown, Cyril N. Hoyler, and Rudolph A. Bierwirth (Reviewed by T. O. Kinn): 2862
- Theory of Mathematical Machines, by Francis J. Murray (Reviewed by J. R. Ragazzini): 2814
- Two-Way Radio, by Samuel Freedman (Reviewed by Ralph R. Batcher): 2745
- Über Frequenzmodulatoren für Ultrahochfrequenz, by George Weber (Reviewed by Hans K. Jenny): 2724
- Ultrahigh Frequency Transmission and Radiation, by Nathan Marchand (Reviewed by Stanford Goldman): 2954
- Vector and Tensor Analysis, by Louis Brand (Reviewed by Nathan Marcuvitz): 2928
- Writing the Technical Report (New Second Edition), by J. Raleigh Nelson (Reviewed by R. S. Burnap): 2892.

INDEX TO AUTHORS

Numbers refer to the chronological list. Light-face type indicates papers, **bold-face type** indicates discussions and correspondence, and *italics* refer to books and book reviews.

- | | | | |
|---|--|--|---|
| <p>A</p> <p>Adams, J. J., 2867</p> <p>Adler, Robert, 2718</p> <p>Affanasiev, Kosmo J., 2655</p> <p>Affel, Herman A., 2820</p> <p>Aharoni, J., 2927</p> <p>Allen, Edward W. Jr., 2737, 2737</p> <p>Altar, William, 2771, 2783, 2824</p> <p>Anderson, Lloyd J., 2770</p> <p>Apker, L., 2884</p> <p>Aram, Nathan W., 2738</p> <p>Armstrong, Edwin H., 2737</p> <p>Avins, Jack, 2528</p> <p>B</p> <p>Bailey, F. M., 2900</p> <p>Baker, George M. K., 2891</p> | <p>Baker, W. R. G., 2800, 2843</p> <p>Ballard, R. C., 2852</p> <p>Batcher, Ralph R., 2745</p> <p>Bauchman, Robert W., 2856</p> <p>Beam, R. E., 2835</p> <p>Beck, A. C., 2909</p> <p>Beitman, M. N., 2840, 2842</p> <p>Bendz, Waldemar I., 2818</p> <p>Beranek, Leo L., 2855</p> <p>Bettinger, Hoyland, 2837</p> <p>Beyer, R. T., 2938</p> <p>Bierwirth, Rudolph A., 2862</p> <p>Binnian, William, 2856</p> <p>Blasi, E. A., 2767</p> <p>Black, L. J., 2353</p> <p>Blewett, J. P., 2968</p> <p>Braaten, Arthur M., 2807</p> <p>Bracewell, R. N., 2849</p> | <p>Brand, Louis, 2928</p> <p>Breazeale, William M., 2719</p> <p>Briggs, V. R., 2528</p> <p>Browder, Jay E., 2792</p> <p>Brown, D. Warburton, 2839</p> <p>Brown, George H., 2862</p> <p>Brown, J. E., 2737</p> <p>Brown, Robert H., 2828</p> <p>Bullington, Kenneth, 2894</p> <p>Burgess, R. E., 2651</p> <p>Burks, Arthur W., 2826</p> <p>Burnap, R. S., 2744, 2891, 2892</p> <p>Bush, R. R., 2806</p> <p>C</p> <p>Carnahan, C. W., 2737, 2738</p> <p>Chance, Britton, 2878, 2879</p> <p>Chu, L. J., 2836</p> | <p>Chinn, H. A., 2842, 2963</p> <p>Christiansen, Wilbur Norman, 2798</p> <p>Clapp, J. L., 2721</p> <p>Clark, Donald L., 2967</p> <p>Clark, John R., 2632</p> <p>Clark, John W., 2731</p> <p>Classen, Edward F. Jr., 2738</p> <p>Clement, L. M., 2840, 2891</p> <p>Cobine, J. D., 2854, 2883</p> <p>Cocking, W. T., 2811</p> <p>Cockrell, W. D., 2775</p> <p>Cohn, Seymour B., 2831, 2859</p> <p>Colino, A., 2565</p> <p>Coltman, J. W., 2824</p> <p>Corrington, Murlan S., 2875</p> <p>Cosslett, V. E., 2789</p> <p>Cowan, Frank A., 2935</p> |
|---|--|--|---|

Cox, Russell C., 2936
Crawford, F. H., 2772
Creamer, W. J., 2810
Creveling, Cyrus J., 2751
Crew, William H., 2929
Criss, George B., 2952
Crosby, Murray G., 2864
Crout, Prescott, D., 2911
Cuccia, C. L., 2806
Cullwick, E. G., 2860
Cunningham, W. J., 2876
Curry, J. R., 2854, 2883
Cutler, C. C., 2918, 2946

D

Davis, Thomas McL., 2750
Day, John P., 2770
de Mars, Paul A., 2737
Denny, Charles R., 2799
Dickey, Edward T., 2891
Dickson, Donald C., Jr., 2801
Dinger, Harold E., 2730, 2730
Dishal, Milton, 2802, 2802
Dolph, C. L., 2625
Donal, J. S., Jr., 2806
Dow, W. G., 2720

E

Eaglesfield, C. C., 2740
Edwards, C. F., 2903
Eisenberg, Philip, 2963
Epstein, D. W., 2471
Espenschied, Lloyd, 2723
Everitt, W. L., 2817

F

Fano, R. M., 2922
Fellers, R. G., 2887
Ferrell, Oliver P., 2786
Field, Lester M., 2734
Fink, Donald G., 2811, 2861,
Forbes, H. C., 2725
Fox, A. Gardner, 2950
Fredendall, Gordon L., 2561,
2853
Freedman, Jerome, 2717
Freres, Clemens H., 2770
Friis, H. T., 2788
Fuboni, Eugene G., 2898

G

Gallagher, Charles J., 2883
Garner, W. R., 2908
George, E. F., 2757
Giacoletto, L. J., 2577, 2808
Gilmour, Ronald R., 2753
Gladwin, A. S., 2943
Glauber, J. J., 2913
Glover, Alan M., 2818
Goffard, S. J., 2876
Goldberg, Harold, 2528, 2868
Goldsmith, Alfred N., 2891
Gordon, James F., 2966
Gorham, John E., 2764
Gould, William B., 2788
Gowdey, Maurice, V., 2822
Graf, Alois W., 2930
Grieg, D. D., 2913
Grover, Frederick W., 2722,
2747, 2838
Gurewitsch, A. M., 2781

H

Haef, A. V., 2895
Hagstrum, H. D., 2795
Hallman, Ludlow B., Jr., 2822
Hamburger, Ferdinand, 2908
Hanley, T. E., 2895
Hanson, O. B., 2837
Hare, Milton D., 2772
Harris, Donald B., 2796
Harris, Wilbur T., 2839
Harrison, A. E., 2926
Hastings, A. E., 2578, 2847

Hawley, Melville S., 2866
Hegbar, H. R., 2806
Henney, Keith, 2835
Herold, E. W., 2785
Hersfield, Sanford, 2542
Hoffman, Banesh, 2929
Holm, Ragnar, 2841
Hopper, Andrew L., 2907
Hoyle, W. G., 2741
Hoyler, Cyril N., 2862
Huber, William A., 2560
Huggins, William H., 2551, 2857,
2888, 2923, 2953
Hultgren, Ralph D., 2822
Hunt, Lloyd E., 2871
Huntoon, Robert D., 2941

J

Jansky, C. M., 2737
Jansky, Karl G., 2809
Jenny, Hans K., 2724
Johnson, Earl M., 2877
Joliffe, C. B., 2845
Jones, B. W., 2841
Jordan, E. C., 2945

K

Kahnke, J., 2884
Kallman, Heinz, 2626
Kantor, Myron, 2965
Katzin, Martin, 2856, 2924
Kell, R. D., 2851
Kilgore, G. R., 2805
Kilgour, C. E., 2774
King, A. P., 2946
King, D. D., 2790
King, Ronald, 2542
Kinn, T. P., 2862
Kircher, Reymond J., 2732
Kirkman, Robert A., 2551
Kirkpatrick, George M., 2784
Kleene, S. C., 2880
Kline, Morris, 2551
Kobilsky, M. J., 2869
Kock, W. E., 2946
Kompfner, Rudolf, 2736
Korman, N. I., 2512
Kraus, John D., 2812
Krauss, Herbert L., 2685
Kretzmer, Ernest R., 2561
Kurshan, J., 2805

L

Lacy, Raymond E., 2728
Lafferty, J. M., 2830, 2858
Landon, Vernon D., 2802
Larsen, M. J., 2729
Lauer, Henri, 2819
Lavoo, Norman T., 2912
Lawson, A. W., 2922
Le Corgeiller, P., 2819
Leslie, Charles B., 2870
Lesnick, Robert, 2819
Lewin, Gerhard, S., 2787
Licklider, J. C. R., 2876
Lindenblad, N. E., 2947
Linder, Ernest G., 2756
Llewellyn, Frederick B., 2844
Lockwood, Charles A., Jr., 2821
Lonsdale, E. M., 2872
Lundstrom, Oscar C., 2791

M

MacLean, William R., 2890
Main, W. F., 2872
Malling, Leonard R., 2933
Manning, Lawrence A., 2906
Malter, L., 2885
Marcuvitz, Nathan, 2928
Mason, W. P., 2874
Matson, Leslie E., 2819
Mautner, Leonard, 2751
Maxwell, Don E., 2932
McConnell, Robert A., 2914

McCaughan, Henry S., 2870
McNally, J. O., 2942
McNicol, Donald, 2743, 2748
Meahl, Harry R., 2752
Merrill, Lynn L., 2729, 2967
Middleton, David, 2761
Miles, John W., 2670, 2921, 2951
Miller, G. H., 2938
Miller, P. H., Jr., 2758
Miller, Stewart E., 2769, 2907
Mills, John, 2817
Moir, James, 2499
Moreno, Theodore, 2791
Morton, P. L., 2353
Moskowitz, S., 2913
Moulic, William, 2775
Mumford, W. W., 2739
Murray, Francis J., 2814

N

Nelson, J. Raleigh, 2892
Newell, Homer E., Jr., 2829
Norton, Kenneth A., 2717, 2717,
2762, 2861

O

Offner, Franklin R., 2766
Omberg, Arthur C., 2717, 2717
Ostlund, E. M., 2896

P

Page, Robert M., 2746
Paine, Harold G., 2730, 2730
Parke, Nathan Greer, III, 2838
Parzen, Philip, 2742, 2763
Pekeris, C. L., 2780
Peterson, L. C., 2915
Petraglia, Frank A., 2930
Petrick, Raymond O., 2937
Pettit, Joseph M., 2462, 2765
Phillips, H. B., 2886
Pickard, Greenleaf W., 2944
Pierce, J. R., 2734, 2735
Piore, E. R., 2893
Plusc, Igor, 2882
Pollack, Dale, 2737
Pound, R. V., 2940
Powell, Ted, 2499
Preisman, Albert, 2662
Pullen, Keats A., Jr., 2632

R

Ragazzini, John R., 2779, 2814
Ramberg, E. G., 2471
Rambo, William R., 2848
Randall, R. H., 2779
Rao, V. V. L., 2820
Ratcliffe, J. A., 2762
Rauch, L. L., 2904
Reber, Grote, 2823
Reich, Edgar, 2651
Reich, Herbert J., 2797
Reitlinger, Adolf, 2632
Riblet, Henry J., 2625, 2782
Richards, Paul I., 2804
Richter, Walter, 2815
Rideout, Vincent C., 2827
Ring, D. H., 2909
Roberts, Shepard, 2759
Roe, John H., 2962
Rogers, H. S., 2865
Rogers, T. H., 2755
Romanow, Frank F., 2866
Rose, Albert, 2916
Roys, H. E., 2897, 2934
Rubel, J. H., 2968
Russell, Frederick A., 2779
Ruthberg, Stanley, 2883
Ryder, J. D., 2863

S

Sabaroff, Samuel, 2834
Sack, H. S., 2938
Samuel, Arthur L., 2731

Sanders, Frederick H., 2749
Schelkunoff, S. A., 2542
Schlesinger, Kurt, 2521, 2846
Schroeder, A. C., 2561, 2852,
2853
Schutz, Gerald C., 2767
Schutz, Harald, 2833
Seely, Samuel, 2889
Selgin, Paul J., 2774
Shaw, Robert C., 2732
Shepherd, W. G., 2942
Shulman, Carl I., 2804, 2805
Silver, Martin, 2896
Sinclair, George, 2945
Siskind, Charles S., 2863
Slack, Charles M., 2801
Sleeper, Milton B., 2864
Smith, Carl E., 2812, 2877
Smith, C. B., 2895
Smith, Lloyd P., 2804
Smith, Otto J. M., 2931
Smith, Phillip H., 2964
Smith, Wilbert B., 2881
Smyth, J. B., 2905
Sommer, A., 2813
Sproull, Robert L., 2756
Stansel, Frank R., 2809
Starnecki, B., 2726
Stetson, Harlan T., 2944
Stodola, E. K., 2776
Stokes, Alfred P. D., 2770
Stone, Ellery W., 2925
Sutro, Peter J., 2898
Sziklai, G. C., 2852

T

Taft, E., 2884
Talpey, Richard G., 2868
Terman, F. E., 2462
Tomlin, S. G., 2353
Toth, Emerick, 2750
Townsend, John R., 2839
Trischka, J. W., 2938
Trolese, L. G., 2905
Tyrrell, W. A., 2919

U

Upton, A. P., 2815

V

Vallarino, A. R., 2896
Van Dyke, Arthur F., 2891
Vaughan, Eric W., 2945
Vormer, Jan J., 2832

W

Wallis, Clifford M., 2773
Wallis, P. J., 2353
Ware, L. A., 2886
Watson, W. H., 2835
Watters, R., 2884
Watton, Alan, 2730
Waynick, A. H., 2807
Weidner, R. T., 2887
Weimer, Paul K., 2916
Weiss, A., 2941
Welge, V., 2793
Wells, Lawrence V., 2499
Wendt, K. R., 2853
Wheeler, Harold A., 2816, 2948,
2949
Whinnery, John R., 2620, 2781,
2926
Wickizer, Gilbert S., 2807
Wilchinsky, Zigmund W., 2899
Winkler, M. R., 2626
Winzemer, A. M., 2939

Y

Young, Victor J., 2792

Z

Zadeh, Lotfi A., 2763
Zworykin, V. K., 2789, 2813

INDEX TO SUBJECTS

This listing includes technical, sociological, economic, and general papers. Numbers refer to chronological list.

A

Addition Circuits: 2826
 Advance Ball: 2933
 Air Dashpot: 2933
 Amplifiers: 2729, 2734, 2735, 2736, 2760, 2766, 2777, 2797, 2802, 2828, 2866, 2872, 2906, 2931, 2936, 2937, 2952
 Audio-Frequency: 2866, 2931
 Gain: 2866
 Ratings: 2866
 Input Coupling Factor: 2866
 Peak Limiting: 2931
 Dynamic Performance: 2931
 Balanced: 2866
 Band-Pass: 2802
 Double-Tuned: 2802
 Triple-Tuned: 2802
 Cathode-Biased: 2760
 Degenerative: 2760
 Graphical Analysis: 2760
 Cathode-Degenerated: 2872
 Graphical Analysis: 2872
 Cathode-Follower: 2797, 2872
 Conductance: 2797
 Graphical Analysis: 2872
 Input Admittance: 2797
 Susceptance: 2797
 Computing: 2777
 Double-Tuned: 2802
 Feedback: 2952
 Performance Analysis: 2952
 Inverse Nyquist Diagram: 2952
 Grounded-Grid: 2936
 Harmonic: 2828
 Design: 2828
 Impedance-Coupled: 2766
 Intermediate-Frequency: 2729, 2906
 Capacitance-Coupled: 2729
 Radar: 2906
 Magnetic: 2937
 Microwave: 2734, 2735, 2736
 Traveling-Wave: 2734, 2735, 2736
 Operational: 2777
 Power: 2936
 Disk-Seal-Tube: 2936
 Lighthouse-Tube: 2936
 Ultra-High-Frequency: 2936
 Push-Pull: 2766
 Traveling-Wave: 2734, 2735, 2736
 Triple-Tuned: 2802
 Wide-Band: 2729, 2936
 Amplitude Comparator: 2878
 Amplitude Limiting: 2876
 Effect on Noise: 2876
 Analyzers, Electronic: 2777, 2826
 Circuits: 2826
 Operational Amplifiers: 2777
 Annual Review: 2777
 Antennas: 2717, 2777, 2782, 2792, 2822, 2823, 2829, 2869, 2877, 2889, 2917, 2935, 2945, 2946, 2947, 2948, 2949, 2964
 Aircraft: 2945
 Pattern Measurements: 2945
 Using Models, 2945
 Analysis: 2889
 Microwave: 2889
 Directional: 2889
 Broadcasting: 2964
 Capacitor: 2948, 2949
 Circularly Polarized: 2949
 "Cloverleaf": 2964
 Coil: 2948, 2949
 Cone: 2823

Antennas (Cont'd.)
 Cylindrical: 2823
 Directional: 2889, 2935
 Microwave: 2889
 Analysis: 2889
 Mutual Impedance: 2935
 Directive: 2917
 Parabolic Radiators: 2917
 Design: 2917
 Feed: 2917
 Polarization: 2917
 Driving-Point Impedance: 2877
 Electric Dipole: 2948, 2949
 Electric-Field Strength: 2829
 Calculation: 2829
 Field Intensities: 2877
 Short: 2877
 Top-Loaded: 2877
 Vertical: 2877
 Field Strength: 2829
 Electric: 2829
 Calculation: 2829
 Flush-Type: 2947
 Frequency Modulation: 2964
 "Cloverleaf": 2964
 Ground System: 2877
 Helical: 2949
 Impedance: 2877, 2935
 Mutual: 2935
 Vertical: 2835
 Unequal Height: 2935
 Inverted-L: 2877
 Loop: 2792, 2869, 2948, 2949
 Coupling Transformers: 2869
 Input Circuits: 2792
 Magnetic Dipole: 2948, 2949
 Measurements: 2945, 2946
 Gain: 2946
 Patterns: 2945, 2946
 Using Models: 2945
 Microwave: 2782, 2823, 2889, 2917, 2946, 2947
 Directional: 2889
 Analysis: 2889
 Flush-Type: 2947
 Measurements: 2946, 2947
 Beam Width: 2946
 Gain: 2946
 Mutual Coupling: 2946
 Phase: 2946
 Pocket: 2947
 Polarization: 2946
 Radiation Patterns: 2946
 Slot: 2947
 Omnidirectional: 2782
 Parabolic: 2823, 2917
 Design: 2917
 Feeds: 2917
 Focal Devices: 2823
 Polarization: 2917
 Mirrors: 2823
 Parabolic: 2823
 Focal Devices: 2823
 Mutual Impedance: 2935
 Vertical: 2935
 Unequal Height: 2935
 Omnidirectional: 2782
 Tridipole: 2782
 Wave-Guide: 2782
 Parabolic: 2823, 2917
 Design: 2917
 Feeds: 2917
 Focal Devices: 2823
 Polarization: 2917

Antennas (Cont'd.)
 Pocket: 2947
 Radar: 2717, 2822
 Beacons: 2822
 Radiation Patterns: 2945, 2946
 Measurement: 2945, 2946
 Using Models: 2945
 Radiation Resistance: 2877
 Short: 2877
 T: 2877
 Inverted-L: 2877
 Slot: 2947
 Small: 2948, 2949
 Limitations: 2948
 Top-Loaded: 2877
 Tridipole: 2782
 Vertical: 2877, 2935
 Ground System: 2877
 Mutual Impedance: 2935
 Unequal Height: 2935
 Short: 2877
 Top-Loaded: 2877
 Very-High Frequency: 2894
 Free-Space Field: 2894
 Wave-Guide: 2782
 Articulation Index: 2855
 Attenuator: 2752, 2895
 Microwave: 2752, 2895
 "S"-Band: 2752
 Audio Frequencies: 2847, 2855, 2866, 2870, 2897, 2931, 2963, 2966, 2967
 Amplifiers: 2931
 Gain: 2866
 Ratings: 2866
 Peak-Limiting: 2931
 Dynamic Performance: 2931
 Articulation Index: 2855
 Broadcasting: 2963
 Program Transmission Standards: 2963
 Distortion: 2897
 Intermodulation: 2897
 Disk Recording: 2897
 Hearing: 2855
 Indicators: 2847
 Electronic: 2847
 Intelligibility: 2855
 Intermodulation Distortion: 2897
 Analysis: 2897
 Loudspeakers: 2866
 Ratings: 2866
 Measurements: 2847
 Indicators: 2847
 Microphones: 2866
 Ratings: 2866
 Noise Pickup: 2855
 Orthotelephonic Gain: 2855
 Oscillators: 2870
 Frequency Modulated: 2870
 Resistance-Capacitance: 2870
 Frequency Modulated: 2870
 Resistance-Tuned: 2870
 Peak-Limiting Amplifiers: 2931
 Dynamic Performance: 2931
 Recording: 2966, 2967
 Magnetic: 2967
 Heads: 2967
 Field Measurements: 2967
 Vacuum-Tube Transducer: 2966
 Sound Systems: 2866
 Ratings: 2866
 Speech Communication Systems: 2855
 Design: 2855
 Speech Spectra: 2855

Automatic Frequency Control: 2769, 2827, 2940
Servomechanical: 2827
Stabilized Oscillator: 2940

B

"Balun": 2898
Bolometer: 2791
"Box-Car" Lengtheners: 2880
Broadcasting: 2777, 2931, 2963, 2964
Antennas: 2964
"Cloverleaf": 2964
Frequency Modulation: 2964
Antennas: 2964
"Cloverleaf": 2964
Peak-Limiting Amplifiers: 2931
Dynamic Performance: 2931
Program Transmission Standards: 2963

C

Calorimeter: 2848
Microwave: 2848
Coaxial Load: 2848
Camera: 2962
Television: 2962
Field Pickup: 2962
Canada: 2749
Radar Development: 2749
Canadian Council, I.R.E., 2727, 2810, 2860
Report of Education Committee, Montreal: 2727, 2860
Report on Professional Standing: 2727
Cathode Followers: 2760, 2797, 2872
Amplifiers: 2797
Conductance: 2797
Graphical Analysis: 2872
Input Admittance: 2797
Susceptance: 2797
Degenerative: 2760
Graphical Analysis: 2760
Cathode-Ray Tubes: 2764, 2777, 2847
Indicators: 2847
Audio Frequency: 2847
Cavity Resonators: 2771, 2777, 2783, 2849, 2921
Analysis: 2771, 2783
Circle Diagrams: 2771, 2783
Design Charts: 2849
Filter Elements: 2921
Measurements: 2771, 2783
Circle Diagrams: 2771, 2783, 2824
Impedance Plotting: 2824
Circuit Analysis: 2729, 2739, 2740, 2741, 2753, 2761, 2763, 2766, 2771, 2777, 2783, 2802, 2824, 2830, 2849, 2857, 2872, 2898, 2890, 2910, 2918, 2919, 2920, 2921, 2951, 2952
Amplifiers: 2729, 2766, 2802, 2872, 2952
Balanced: 2766
Band-Pass: 2802
Double-Tuned: 2802
Triple-Tuned: 2802
Capacitance-Coupled: 2729
Wide-Band: 2729
Cathode-Degenerated: 2872
Cathode-Follower: 2872
Double-Tuned: 2802
Feedback: 2952
Inverse Nyquist Diagram: 2952
Impedance-Coupled: 2766
Push-Pull: 2766
Triple-Tuned: 2802
Cathode-Degenerated Amplifiers: 2872
Cathode-Follower Amplifiers: 2872
Cavity Resonators: 2849
Design Charts: 2849
Circle Diagrams: 2771, 2783, 2824
Coaxial Lines: 2857, 2888, 2922, 2951
Phase Discontinuities: 2951
Short Circuits: 2857, 2888, 2922

Circuit Analysis (Cont'd.)

Noncontacting: 2857, 2888, 2922
Broadband: 2857, 2888, 2922
Crystal Circuits: 2763
Directional Couplers: 2919
Distributed-Constant Circuits: 2910
Transient Behavior: 2916
Filters: 2921
Microwave: 2921
Quarter-Wave Coupled: 2921
Hybrid Circuits: 2918
"Ideal Filter": 2740
Impedance Plotting: 2824
Circle Diagrams: 2824
Inverse Nyquist Diagram: 2952
Feedback Analysis: 2952
Servomechanism Analysis: 2952
Microwave Resonant Systems: 2771, 2783
n-Meshed Tuned Circuits: 2763
Nyquist Diagram: 2952
Feedback Analysis: 2952
Servomechanism Studies: 2952
Pass Band: 2740
Phase Discontinuities: 2951
Coaxial Lines: 2951
Q Circle: 2771, 2783, 2824
Rectifiers: 2753
Resonant Cavities: 2849
Design Charts: 2849
Resonators: 2890
Equivalent Circuit: 2890
Servomechanisms: 2741, 2952
Inverse Nyquist Diagram: 2952
Short Circuits: 2857, 2922
Noncontacting: 2857, 2922
Broad-Band: 2857, 2922
Step Response: 2740
Transducers: 2890
Resonators: 2890
Transformer Cores: 2761
Noise Loss: 2761
Transition Time: 2741
Transformers: 2898
Balanced-to-Unbalanced Line: 2898
Transient Behavior: 2910
Virtual Displacements: 2910
Transmission Lines: 2898, 2890
Matching Transformers: 2898, 2890
"Balun": 2898
Balanced-to-Unbalanced Line: 2898
Virtual Displacements: 2910
Transient Behavior: 2910
Wave Guide: 2830, 2918
Corner Bend: 2920
Equivalent Circuit: 2920
Hybrid Circuits: 2918
Rectangular: 2830
Ridge: 2830
"Cloverleaf" Antenna: 2964
Coaxial Cable: 2934
Networks: 2934
Coaxial Lines: 2759, 2848, 2857, 2918, 2951
Calorimeter Wattmeter: 2848
Ultra-High Frequency: 2848
Hybrid Circuits: 2918
Junctions: 2759
To Wave Guide: 2759
Broad-Band: 2759
Noncontacting Short Circuits: 2857, 2922
Broad-Band: 2857, 2922
Phase Discontinuities: 2951
Coils: 2834, 2883, 2965
Inductance Calculation: 2834
Nomogram: 2834
Iron-Core: 2883
High-Frequency Excitation: 2883
Losses: 2883
Winding: 2965
Universal: 2965
Ordinary: 2965

Coils (Cont'd.)

Progressive: 2965
Collective Bargaining: 2726
Communication: 2777, 2821, 2934
Coaxial-Cable Networks: 2934
Radio: 2777
Submarine: 2821
Commutation-Method Multiplex: 2903
Commutator, Electronic: 2912
Cyclophon: 2912
Computers: 2777, 2826, 2937
Electronic: 2777, 2826
Circuits: 2826
Magnetic Amplifiers: 2937
Conductance: 2797
Cathode-Follower Amplifiers: 2797
Cone Antennas: 2823
Constitution: 2809
Amendments: 2809
Conversion Gain: 2719
Noise Measurement: 2719
Converters, Frequency: 2769, 2902
Crystal: 2769
Microwave: 2902
Point-Contact: 2902
Silicon: 2902
Co-planar Tubes: 2764
Copper-Oxide Rectifiers: 2753
Corner Bend: 2920
Wave Guide: 2920
Equivalent Circuit: 2920
Counters: 2826, 2912
Cyclophon: 2912
Crystal Circuits: 2763
Predimensioning: 2763
Crystals: 2759, 2719, 2758, 2764, 2777, 2831, 2874, 2902
Low-Coefficient: 2874
Synthetic: 2874
Noise: 2719, 2758, 2759
Piezoelectric: 2777, 2831, 2874
Artificial Twinning: 2831
EDT: 2874
DKT: 2874
Filter: 2874
Oscillator Control: 2874
Synthetic: 2874
Silicon: 2902
Point-Contact Rectifier: 2902
Synthetic: 2874
Low-Coefficient: 2874
Rectifiers: 2764
Cyclophon: 2912
Cyclotron-Frequency Magnetron: 2795
Cylindrical Antenna: 2823

D

Dauphine Twinning: 2831
Delay Lines: 2968
Detectability: 2907
Radar Targets: 2907
Dichroic Mirrors: 2852
Differential Analyzers: 2777
Differentiating Transformers: 2878
Differentiator: 2937
Magnetic Amplifier: 2937
Dimensional Analysis: 2938
Electromagnetic Quantities: 2938
Directional Couplers: 2739, 2919
Theory: 2919
Discriminability: 2907
Radar Targets: 2907
Disk Recording (See "Recording")
Disk-Seal Tube: 2781, 2911, 2936
Amplifier: 2936
Wide-Band: 2936
Input Conductance: 2911
Oscillator: 2781
Transadmittance: 2911
DKT Crystals: 2874

Donutron: 2772
 Distortion: 2897, 2909, 2943
 Frequency-Modulated Wave: 2943
 Transmission Network: 2943
 Intermodulation: 2897, 2943
 Disk Recording: 2897
 Analysis: 2897
 Frequency Modulation: 2943
 Pulse-Duration Modulation: 2909
 Analysis: 2909
 Doppler Effect: 2932
 Aircraft Speed Measurement: 2932
 Duct Propagation: 2780, 2856, 2984
 Duplexers: 2769
 Dynamics: 2779
 Analysis of Problems: 2779

E

Earphones: 2855
 Noise Pickup: 2855
 Echoing Areas: Radar: 2717
 Eddy-Current Loss: 2761
 Transformer Cores: 2761
 Noise Excitation: 2761
 EDT Crystals: 2874
 Education, Engineering: 2810, 2860, 2865, 2930
 Canadian Council: 2860
 Curricula: 2930
 E-Layer: 2786
 Electromagnetic Quantities: 2938
 Dimensional Analysis: 2938
 Electronic Analyzers: 2777, 2826
 Circuits: 2826
 ENIAC: 2826
 Operational Amplifiers: 2777
 Electronic Collisional Frequency: 2757
 Electronic Computers: 2826, 2937
 Addition Circuits: 2826
 Counters: 2826
 Circuits: 2826
 Counters: 2826
 ENIAC: 2826
 Flip-Flops: 2826
 Magnetic Amplifiers: 2937
 Memory Circuits: 2826
 Flip-Flops: 2826
 Multiplication Circuits: 2826
 Electronic Switching: 2912
 Cyclophon: 2912
 Electronics: 2821, 2843, 2893
 In Submarine Warfare: 2821
 Peacetime Applications: 2843
 Research: 2893
 Office of Naval Research: 2893
 Electron Multipliers: 2885
 Magnetic: 2885
 Gain: 2885
 Frequency Variation: 2885
 Electron-Ray Tubes: 2900
 Tuning Indicator: 2900
 Electron Reflectors: 2830
 Electron Trajectory: 2830
 Electron Tubes (see Vacuum Tubes)
 Engineering Education: 2810, 2930
 Curricula: 2930
 Engineering Profession: 2845
 Relation to World Affairs: 2845
 ENIAC: 2826
 Equivalent Units: 2938
 Exponential Transmission Line: 2798
 Straight Conductors: 2798
 Tapered: 2798

F

Facsimile: 2777
 Federal Communications Commission: 2799
 Filters: 2921
 Band-Pass: 2921
 Microwave: 2921

Filters (Cont'd.)

Band-Rejection: 2921
 Microwave: 2921
 Microwave: 2921
 Quarter-Wave Couplings: 2921
 Resonant-Element: 2921
 Quarter-Wave-Coupled: 2921
 Resonant-Element: 2921
 Microwave: 2921
 Flip-Flop Circuits: 2826, 2878
 Flop-Over Circuit: 2878
 Fluctuation Noise: 2876, 2903, 2914
 Microwave Tetrodes: 2914
 Pulse-Height Multiplex: 2903
 Flush-Type Radiators: 2947
 Frequency Control: 2804, 2805, 2806, 2827, 2940
 Automatic: 2827
 Servomechanical: 2827
 Electron-Beam: 2804, 2805, 2806
 Magnetron Oscillator: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806
 Negative-Grid Controlled: 2804, 2805, 2806
 Oscillators: 2804, 2805, 2806
 Stabilized Oscillator: 2940
 Frequency Converters: 2769, 2902
 Crystal: 2769
 Microwave: 2902
 Point-Contact: 2902
 Silicon: 2902
 Frequency Measurement: 2868, 2871
 Calibration: 2871
 Wavemeters: 2871
 Microwave: 2871
 Frequency Standards: 2868
 Secondary: 2868
 Microwave: 2868
 Harmonic Generators: 2868
 Silicon-Crystal: 2868
 Harmonic Multipliers: 2868
 Heterodyne Detectors: 2868
 Microwave: 2868, 2871
 Wavemeters: 2871
 Calibration: 2871
 Wavemeters: 2868, 2871
 Coaxial-Line: 2868
 Microwave: 2871
 Calibration: 2871
 Frequency Modulation: 2718, 2737, 2738, 2777, 2804, 2805, 2806, 2808, 2867, 2870, 2875, 2882, 2896, 2900, 2941, 2943, 2964
 Amplifier-Limiter: 2941
 Synchronous: 2941
 Bandwidth: 2875
 Variation with Modulation Index: 2875
 Broadcasting: 2964
 Antennas: 2964
 "Cloverleaf": 2964
 Center-Frequency-Stabilized: 2896
 Demodulator: 2941
 Synchronized Oscillator: 2941
 Deviation Ratio: 2943
 Distortion: 2943
 Distortion: 2943
 Calculation: 2943
 Transmission Network: 2943
 Electron-Beam: 2804, 2805, 2806
 Electron-Ray Indicator: 2900
 Interference: 2882
 Off-Channel: 2882
 Co-Channel: 2882
 Intermediate-Frequency Amplifiers: 2857
 Intermodulation Distortion: 2943
 Limiter-Amplifier: 2941
 Synchronous: 2941
 Magnetron Oscillators: 2804, 2805, 2806
 Electron-Beam Control: 2804, 2805, 2806
 Modulation Index: 2875
 Variation of Bandwidth: 2875

Frequency Modulation (Cont'd.)

Modulator Tube: 2718
 Multitone: 2808
 Theory: 2808
 Negative-Grid-Controlled: 2804, 2805, 2806
 Electron Beam: 2804, 2805, 2806
 Oscillators: 2804, 2805, 2806, 2870, 2896
 Audio-Frequency: 2870
 Resistance-Tuned: 2870
 Center-Frequency-Crystallized: 2896
 Feedback: 2870
 Resistance-Tuned: 2870
 Magnetron: 2804, 2805, 2806
 Electron-Beam Control: 2804, 2805, 2806
 Resistance-Capacitance: 2870
 Resistance-Tuned: 2870
 Resistance-Tuned: 2870
 Phase-Modulator Tube: 2718
 Phasitron: 2718
 Ranges: 2737, 2738
 Co-Channel Interference-Limited: 2737
 Noise-Limited: 2737
 Receivers: 2867, 2900, 2941, 2943
 Amplifier-Limiter: 2941
 Synchronous: 2941
 Demodulator: 2941
 Synchronized Oscillator: 2941
 Distortion: 2943
 Calculation: 2943
 Intermediate-Frequency Amplifiers: 2867
 Limiter-Amplifier: 2941
 Synchronous: 2941
 Tuning Indicator: 2900
 Electron-Ray: 2900
 Spectrum: 2808
 Transmission: 2896
 Center-Frequency Stabilized: 2896
 Tuning Indicator: 2900
 Electron-Ray: 2900
 Frequency Multipliers: 2828
 Design: 2828
 Frequency-Shift Keying: 2777
 Frequency Stabilization: 2804, 2805, 2806, 2940
 Automatic: 2804, 2805, 2806
 Magnetron Oscillators: 2804, 2805, 2806
 Electron-Beam Control: 2804, 2805, 2806
 Negative-Grid Control: 2804, 2805, 2806
 Magnetron Oscillators: 2804, 2805, 2806
 Negative-Grid Control: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806
 Microwave Oscillators: 2940
 Oscillators: 2804, 2805, 2806
 Magnetron: 2804, 2805, 2806
 Electron-Beam Control: 2804, 2805, 2806
 Negative-Grid Control: 2804, 2805, 2806
 Frequency Standards: 2868
 Harmonic Generators: 2868
 Silicon Crystal: 2868
 Harmonic Multipliers: 2868
 Heterodyne Detectors: 2868
 Microwave: 2868
 Secondary: 2868
 Microwave: 2868
 Wavemeters: 2868
 Coaxial-Line: 2868

G

Generators: 2854
 Noise: 2854
 Electrical: 2854
 Random: 2854

Ground Reflection: 2717
Radar: 2717
Ground-Wave Transmission: 2894
Grounded-Grid Amplifier: 2936
Wide-Band: 2936

H

Harmonic Amplifiers: 2828, 2868
Design: 2828
Frequency Standard: 2868
Harmonic Generators: 2868
Silicon-Crystal: 2868
Headphones: 2855
Noise Pickup: 2855
Hybrid Circuits: 2918

I

Iconoscope: 2913
Video Storage: 2913
Secondary Emission: 2913
"Ideal Filter": 2740
Identification Friend or Foe: 2821
Submarine: 2821
Image Orthicon: 2962
Field-Pickup Camera: 2962
Impedance: 2790, 2824
Plotting: 2824
Transmission Line: 2790
Measurement: 2790
Impulse Noise: 2876
Indicators: 2847, 2907
Audio-Frequency: 2847
Cathode-Ray Tube: 2847
Electronic: 2847
Cathode-Ray Tube: 2747
Electronic: 2847
Radar: 2907
Plan-Position: 2907
Remote Projection: 2907
Detectability: 2907
Discriminability: 2907
Inductance: 2834
Inductors: 2883
Iron-Core: 2883
High-Frequency Excitation: 2883
Losses: 2883
Loop Antennas: 2792
Institute of Radio Engineers: 2726, 2727, 2799, 2800, 2809, 2810, 2843, 2844, 2845, 2860, 2865
Canadian Council: 2727, 2810, 2860
Report of Education Committee, Montreal: 2727, 2860
Report on Professional Standing: 2727
Committee on Professional Recognition: 2726
Report on Collective Bargaining: 2726
Constitutional Amendments: 2809
Engineering Profession: 2845
Relation to World Affairs: 2845
Sections: 2844
Test for Success: 2844
Instrumentation (See "Measurements")

K

Klystrons: 2756, 2764, 2795, 2886, 2942, 2953
Buncher: 2886
Grid Spacing: 2886
Gaps: 2886
Transit-Time Effect: 2886
Reflex: 2756, 2942, 2953
Double Resonator: 2759
Efficiency: 2756
Multifrequency Bunching: 2953
Transit-Time Effect: 2886

L

Lighthouse Tubes: 2781, 2936, 2911
Amplifier: 2936

Lighthouse Tubes (Cont'd.)

Wide-Band: 2936
Input Conductance: 2911
Oscillators: 2781
Transadmittance: 2911
Limiters: 2876
Amplitude: 2876
Effect on Noise: 2876
Links, Relay: 2903
Multiplex: 2903
Commutation: 2903
Fluctuation Noise: 2903
Pulse-Height: 2903
Loudspeakers: 2866
Ratings: 2866

M

Magnetic Amplifiers: 2937
Magnetic Recording: 2967
Heads: 2967
Field Measurement: 2967
Magnetrans: 2764, 2772, 2795, 2804, 2805, 2806
Cyclotron-Frequency: 2795
Donutron: 2772
Frequency-Modulated: 2804, 2805, 2806
Electron-Beam Control: 2804, 2805, 2806
Negative-Grid Control: 2804, 2805, 2806
Multicavity: 2795
Negative-Resistance: 2795
Rieke Diagram: 2795
"Rising-Sun": 2795
Squirrel-Cage: 2772
Strapped: 2795
Traveling-Wave: 2795
Tunable: 2772
Measurements: 2719, 2730, 2732, 2751, 2758, 2759, 2765, 2767, 2790, 2791, 2847, 2848, 2868, 2871, 2884, 2895, 2897, 2908, 2909, 2916, 2931, 2932, 2941, 2945, 2946
Aircraft Speed: 2932
Doppler Effect: 2932
Amplifiers: 2931
Dynamic Performance: 2931
Antenna: 2945, 2946
Gain: 2946
Radiation Patterns: 2945, 2946
Using Models: 2945
Audio Frequency: 2847
Cathode-Ray Tube: 2847
Electronic Indicator: 2847
Automatic-Slideback Voltmeter: 2751
Bolometric: 2791
Cathode-Ray-Tube Indicators: 2847
Circulated-Pulse Testing: 2908
Crystals: 2719, 2758, 2759
Distortion: 2909
Intermodulation: 2897
Disk Recording: 2897
Pulse-Duration Modulation: 2909
Field-Intensity Meter: 2941
Synchronized Oscillator: 2941
Frequency: 2868, 2871
Harmonic Generators: 2868
Silicon-Crystal: 2868
Harmonic Multipliers: 2868
Heterodyne Detectors: 2868
Microwave: 2886
Standards: 2868
Secondary: 2868
Microwave: 2868
Wavemeters: 2868, 2871
Calibration: 2871
Coaxial-Line: 2868
Impedance: 2790, 2916
Oscillographic Presentation: 2916
Reflection-Coefficient Plane: 2916

Measurements (Cont'd.)

Transmission Line: 2790, 2916
Indicators: 2847
Audio Frequency: 2847
Cathode-Ray Tube: 2847
Intermodulation Distortion: 2897
Disk Recording: 2897
Noise: 2719, 2730, 2758, 2759, 2765
Accuracy: 2730
Conversion Gain: 2719
Crystal Mixers: 2758, 2759
Crystal Rectifiers: 2758, 2759
Meters: 2730
Peak Voltmeter: 2751
Power: 2732, 2791, 2848
Bolometric: 2791
Calorimeter: 2848
Ultra-High Frequency: 2848
Calorimeter: 2848
Coaxial Load: 2848
Water-Filled Line: 2848
Pulse: 2908
Testing Repeaters: 2908
Pulse-Duration Modulation: 2909
Distortion: 2909
Pulse-Measuring Voltmeter: 2751
Radar: 2767, 2923
Field: 2767
Maintenance: 2767
Receiver: 2765
Noise: 2765
Sensitivity: 2765
Recording: 2897
Disk: 2897
Intermodulation: 2897
Sensitivity: 2765
Signal Generators: 2895
Ultra-High Frequency: 2895
Wide-Range: 2895
Spectrum Analyzers: 2884
Double-Heterodyne: 2884
Microwave: 2884
Wide-Range: 2884
Square Wave: 2908
Synchronized Oscillators: 2941
Field-Intensity Meter: 2941
Linear Voltmeter: 2941
Testing Repeaters: 2908
Transient Response: 2908
Circulated-Pulse Testing: 2908
Transmission-Line Chart: 2916
Oscillographic Presentation: 2916
Transmission Lines: 2790
Damping: 2790
Impedance: 2790
Phase-Shift: 2790
Voltmeter: 2751, 2941
Linear: 2941
Synchronized Oscillator: 2941
Peak-Measuring: 2751
Automatic Slideback: 2751
Meteorological Conditions: 2944
Wave Propagation: 2944
Tropospheric: 2944
Microphones: 2855, 2866
Input-Coupling Factor: 2866
Noise Pickup: 2855
Ratings: 2866
Microwaves: 2728, 2731, 2732, 2739, 2752, 2756, 2758, 2759, 2769, 2770, 2771, 2772, 2777, 2780, 2781, 2782, 2783, 2791, 2795, 2804, 2805, 2806, 2807, 2824, 2827, 2830, 2856, 2868, 2871, 2884, 2888, 2889, 2890, 2895, 2898, 2902, 2904, 2911, 2914, 2917, 2918, 2919, 2921, 2936, 2940, 2946, 2947, 2950, 2951
Amplifiers: 2936
Power: 2936

Microwaves (Cont'd.)
 Grounded-Grid: 2936
 Wide-Band: 2936
 Antennas: 2782, 2889, 2917, 2946, 2947
 Directional: 2889
 Analysis: 2889
 Flush-Type: 2947
 Measurements: 2946
 Omnidirectional: 2782
 Parabolic Radiators: 2917
 Design: 2917
 Feeds: 2917
 Polarization: 2917
 Pocket: 2947
 Slot: 2947
 Attenuator: 2752
 "Balun": 2898
 Coaxial Lines: 2951
 Phase Discontinuities: 2951
 Converters: 2902
 Diffraction: 2889
 Directional Couplers: 2739, 2919
 Ducts: 2780
 Feed: 2889
 Filters: 2921
 Quarter-Wave Couplings: 2921
 Resonant-Element: 2921
 Frequency Control: 2827
 Automatic: 2827
 Servomechanical: 2827
 Frequency Converters: 2902
 Microwave: 2902
 Wide-Band: 2902
 Point-Contact: 2902
 Silicon: 2902
 Frequency Measurement: 2868, 2871
 Standards: 2886, 2871
 Frequency Modulation: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806
 Magnetrons: 2804, 2805, 2806
 Negative-Grid: 2804, 2805, 2806
 Frequency Stabilization: 2804, 2805, 2806, 2940
 Electron-Beam: 2804, 2805, 2806
 Electronic: 2940
 Magnetron: 2804, 2805, 2806
 Negative-Grid: 2804, 2805, 2806
 Frequency Standards: 2868, 2871
 Secondary: 2868
 Hybrid Circuits: 2918
 Junctions: 2759
 Coaxial to Wave-Guide: 2759
 Broad Band: 2759
 Magnetrons: 2804, 2805, 2806
 Frequency Modulated: 2804, 2805, 2806
 Electron-Beam: 2804, 2905, 2806
 Frequency Stabilized: 2804, 2805, 2806
 Measurements: 2732, 2791, 2884, 2895
 Power: 2791
 Bolometric: 2791
 Water Load: 2732
 Signal Generators: 2895
 Wide-Range: 2895
 Spectrum Analyzers: 2884
 Double-Heterodyne: 2884
 Wide-Range: 2884
 Omnidirectional: 2782
 Tridipole: 2782
 Wave-Guide: 2782
 Oscillators: 2731, 2758, 2781, 2795, 2827, 2940
 Disk-Seal Tube: 2781
 Double-Resonator Klystron: 2795
 Frequency Control: 2827
 Automatic: 2827
 Frequency-Stabilized: 2940
 Electronic: 2940
 Klystron: 2795
 Lighthouse Tube: 2781
 Magnetron: 2795

Microwaves (Cont'd.)
 Reflex: 2731, 2758
 Velocity-Modulated: 2758
 Reflex Klystron: 2795
 Triode: 2795
 Velocity-Modulated: 2758
 Velocity-Variation: 2731, 2795
 Wide-Tuning-Range: 2731
 Point-Contact Rectifier: 2902
 Propagation: 2770, 2780, 2807, 2856
 Duct: 2780, 2856
 Low-Level: 2780
 Low Ocean: 2856
 Rain, Effect of: 2770
 Attenuation: 2770
 Through Rain: 2770
 Refraction: 2807
 Tropospheric: 2807
 Receivers: 2769, 2902
 Converters: 2902
 Wide-Band: 2902
 Radar: 2769
 Reflectors: 2889
 Relay: 2728, 2777
 Multichannel: 2728
 "S"-Band Attenuator: 2752
 Signal Generators: 2898
 Wide-Range: 2895
 Silicon Rectifiers: 2902
 Spectrum Analyzers: 2884
 Double-Heterodyne: 2884
 Wide-Range: 2884
 Transducers: 2890
 Resonators: 2890
 Equivalent Circuit: 2890
 Transformers: 2898
 Wide-Band: 2898
 Balanced-to-Unbalanced Line: 2898
 "Balun": 2898
 Transmission Lines: 2919
 Directional Couplers: 2919
 Vacuum Tubes: 2756, 2772, 2899, 2911, 2914
 Disk-Seal Tubes: 2911
 Input Conductance: 2911
 Transadmittance: 2911
 Donutron: 2772
 Electrode Dissipation: 2899
 Magnetron: 2772
 Space-Charge Effects: 2914
 Squirrel-Cage Magnetron: 2772
 Tetrodes: 2914
 Space-Charge Effects: 2914
 Transit-Time Effects: 2914
 Wave-Guide: 2830, 2890, 2918, 2919, 2950
 Differential Phase-Shift Section: 2950
 Directional Couplers: 2919
 Hybrid Circuits: 2918
 Phase Changer: 2950
 Ridge: 2830
 Transducers: 2890
 Equivalent Circuit: 2890
 Wavemeters: 2868, 2871
 Wave Propagation: 2904
 Tropospheric: 2904
 Index of Refraction: 2904
 Miller Effect: 2730
 In Noise Meters: 2730
 Mixers: 2719, 2758, 2759
 Crystal: 2719, 2758, 2759
 Noise: 2719, 2758, 2759
 Modulation: 2728, 2777, 2796, 2808, 2875, 2879, 2880, 2896, 2903, 2909, 2912
 Amplitude: 2808
 Multitone: 2808
 Spectrum: 2808
 Theory: 2808
 Frequency: 2808, 2875, 2896
 Bandwidth: 2875

Modulation (Cont'd.)
 Variation with Modulation Index: 2875
 Center-Frequency Stabilized: 2896
 Modulation Index: 2875
 Variation of Bandwidth: 2875
 Multitone: 2808
 Oscillators: 2896
 Center-Frequency Stabilized: 2896
 Spectrum: 2808
 Theory: 2808
 Pulse: 2880, 2903, 2909, 2912
 Cyclophon: 2912
 Duration: 2909
 Distortion: 2909
 Lengtheners: 2880
 "Box-Car" Type: 2880
 Pulse-Height Multiplex: 2903
 Fluctuation Noise: 2903
 Pulse-Time-Division: 2728
 Microwave Relay: 2728
 Selective Demodulation: 2796
 Time: 2878, 2879
 Modulation Index: 2875
 Frequency Modulation: 2875
 Variation of Bandwidth: 2875
 Moon Radar: 2717
 Mosaics: 2913
 Video Storage: 2913
 Secondary Emission: 2913
 Multiar: 2878
 Multiplex: 2728, 2796, 2903, 2912
 Pulse-Time Modulation: 2912
 Cyclophon: 2912
 Commutation: 2903
 Fluctuation Noise: 2903
 Microwave Relay: 2728
 Pulse-Height: 2903
 Pulse-Time Division: 2728
 Selective Demodulation: 2796
 Multipliers: 2828, 2885
 Electron: 2885
 Magnetic: 2885
 Frequency Variation: 2885
 Gain: 2885
 Frequency: 2828
 Design: 2828
 Multitone Modulation: 2808
 N
 Naval Research: 2893
 Electronic Research: 2893
 Navigation: 2762
 Error: 2762
 Propagated Wave: 2762
 Navigation Aids: 2777
 Negative-Resistance Magnetron: 2795
 Network Analysis: 2761
 Noise Loss: 2761
 Transformer Cores: 2761
 Networks: 2739, 2740, 2910, 2943
 Directional Coupler: 2739
 Distortion: 2943
 Frequency-Modulated Wave: 2943
 "Ideal Filter": 2740
 Pass Band: 2740
 Step Response: 2740
 Transient Analysis: 2910
 Virtual Displacements: 2910
 Transition Time: 2740
 Virtual Displacements: 2910
 Transient Behavior: 2910
 Noise: 2717, 2719, 2730, 2758, 2759, 2761, 2765, 2769, 2792, 2854, 2876, 2883, 2903, 2914
 Amplitude Limiting: 2876
 Effect on Receiver Performance: 2876
 Coils: 2883
 Iron-Core: 2883
 High-Frequency Excitation: 2883

Noise (Cont'd.)

Losses: 2883
 Conversion: 2758, 2759
 Crystal Rectifiers: 2719, 2758, 2759
 Fluctuation: 2876, 2903, 2914
 Frequency Selectivity: 2876
 Effect on Receiver Performance: 2876
 Generators: 2854, 2876
 Electrical: 2854
 Gas Tube: 2854
 Impulse: 2876
 Input-Circuit: 2792
 Loop Antennas: 2792
 Measurement: 2719, 2730
 Accuracy: 2730
 Conversion Gain: 2719
 Effect of Bandwidth: 2730
 Response Time: 2730
 Meters: 2730
 Accuracy: 2730
 Microwaves: 2914
 Tetrodes: 2914
 Space-Charge Effects: 2914
 Transit-Time Effects: 2914
 Noise Figure: 2769
 Noise Loss: 2761
 Transformer Cores: 2761
 Radar: 2717
 Random: 2761
 Eddy-Current Loss: 2761
 Receiver: 2765
 Measurement: 2765
 Specification: 2765
 Receiver Performance: 2876
 Amplitude Limiting: 2876
 Frequency Selectivity: 2876
 Sine Wave: 2761
 Sources: 2854
 Electrical: 1854
 Gas Tube: 2854
 Spectrum, 2758, 2759
 Crystal Rectifiers: 2758, 2759
 Temperature: 2717
 Transformers: 2883
 Iron-Core: 2883
 High-Frequency Excitation: 2883
 Losses: 2883
 Vacuum Tubes: 2914
 Space-Charge Effects: 2914
 Transit-Time Effects: 2914
 Nomograms: 2834
 Inductance Calculation: 2834
 Nonlinear Transformers: 2937
 Nyquist Diagram: 2952
 Servomechanism Analysis: 2952

O

Orthotelephonic Gain: 2855
 Oscillators: 2781, 2804, 2805, 2806, 2827, 2870, 2895, 2896, 2940, 2941
 Audio Frequency: 2870
 Feedback: 2870
 Resistance-Tuned: 2870
 Frequency Modulated: 2870
 Disk-Seal Tube: 2781
 Frequency Control: 2827
 Automatic: 2827
 Servomechanical: 2827
 Frequency-Modulated: 2870, 2804, 2805, 2806, 2896
 Audio Frequency: 2870
 Resistance-Tuned: 2870
 Center-Frequency-Stabilized: 2896
 Magnetron: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806
 Negative-Grid Control: 2804, 2805, 2806
 Frequency Stabilization: 2804, 2805, 2806
 Magnetron: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806

Oscillators (Cont'd.)

Negative-Grid Control: 2804, 2805, 2806
 Frequency-Stabilized: 2940
 Electronic: 2940
 Microwave: 2940
 Lighthouse Tube: 2781
 Microwave: 2781, 2795, 2827
 Automatic Frequency Control: 2827
 Servomechanical: 2827
 Disk-Seal Tube: 2781
 Double-Resonator Klystron: 2795
 Frequency Control: 2827
 Servomechanical: 2827
 Klystron: 2795
 Lighthouse Tube: 2781
 Magnetron: 2795
 Reflex-Klystron: 2795
 Stabilized: 2940
 Triode: 2795
 Velocity-Variation: 2795
 Stabilized 2940
 Electronic: 2940
 Synchronized: 2941
 Oscillograph: 2801, 2916
 Impedance Representation: 2916
 Radiographic: 2801
 Transmission-Line Presentation: 2916

P

Parabolic Antennas: 2823, 2917
 Focal Devices: 2823
 Peak-Limiting Amplifiers: 2931
 Dynamic Performance: 2931
 Peak-Measuring Voltmeter: 2751
 Phase Changer: 2950
 Differential Phase-Shift Section: 2950
 Phase-Modulator Tube: 2718
 Phasitron: 2718
 Pick-Off Circuit: 2878
 Piezoelectric Crystals: 2777, 2831, 2874
 Artificial Twinning: 2831
 DKT: 2874
 EDT: 2874
 Filters: 2874
 Low-Coefficient: 2874
 Oscillator Control: 2874
 Synthetic: 2874
 Twinning: 2831
 Planar Tubes: 2764
 Plan-Position Indicator: 2907
 Remote Rejection: 2907
 Detectability: 2907
 Discriminability: 2907
 Pocket Antennas: 2947
 Point-Contact Rectifiers: 2902
 Positioning System: 2793
 Radio Control: 2793
 Power: 2732, 2791
 Measurement: 2732
 Bolometric: 2791
 Water Load: 2732
 Coaxial Type: 2732
 Professional Recognition: 2726
 Professional Standing: 2727
 Programming Circuits: 2826
 Program Transmission Standards: 2963
 Broadcasting: 2963
 Pulse-Height Multiplex: 2903
 Fluctuation Noise: 2903
 Pulse Transmission: 2728, 2879, 2880, 2895, 2903, 2908, 2909, 2912
 Commutation Multiplex: 2903
 Fluctuation Noise: 2903
 Demodulation: 2879
 Distortion: 2909
 Analysis: 2909
 Lengtheners: 2880
 "Box-Car" Type: 2880
 Pulse-Duration Modulation: 2909

Pulse Transmission (Cont'd.)

Distortion: 2909
 Analysis: 2909
 Pulse-Height Multiplex: 2903
 Fluctuation Noise: 2903
 Pulse-Time Division: 2728
 Microwave Relay: 2728
 Pulse-Time Modulation: 2912
 Cyclophon: 2912
 Measurements: 2895, 2908
 Circulated Pulses: 2908
 Signal Generators: 2895
 Testing Repeaters: 2908
 Modulation: 2879
 Multiplex: 2912
 Cyclophon: 2912
 Push-Pull Amplifiers: 2766

R

Radar: 2717, 2731, 2749, 2764, 2767, 2769, 2777, 2788, 2795, 2821, 2822, 2878, 2879, 2906, 2907, 2918, 2923, 2942, 2953, 2968
 Antennas: 2822
 Beacon: 2822
 Atmosphere, Reflections from: 2788
 ATR: 2769
 Beacon: 2822
 Airborne: 2822
 Blanking Gate: 2822
 Coder: 2822
 Discriminator: 2822
 Ground: 2822
 Centimeter-Wave: 2769
 Receivers: 2769
 Design: 2769
 Detectability: 2907
 Plan-Position Indicator: 2907
 Remote Projection: 2907
 Development: 2749
 In Canada: 2749
 Discriminability: 2907
 Plan-Position Indicator: 2907
 Remote Projection: 2907
 Duplexer: 2769
 Echoing Areas: 2717
 Generators: 2795
 Indicators: 2907
 Plan-Position: 2907
 Projection: 2907
 Intermediate-Frequency Amplifiers: 2906
 Maintenance: 2767
 Field: 2767
 Measurements: 2923
 Modulators: 2822
 Beacon: 2822
 Moon: 2717
 Navigation: 2822
 Beacon: 2822
 Noise Figure: 2769
 Oscillator Tubes: 2731, 2942, 2953
 Reflex: 2731
 Reflex-Klystron: 2942, 2953
 Velocity-Variation: 2731
 Wide-Tuning-Range: 2731
 Plan-Position Indicator: 2907
 Projection: 2907
 Detectability: 2907
 Discriminability: 2907
 Range: 2717
 Range-Finding Circuits: 2878, 2879
 Receivers: 2769, 2822, 2906, 2942, 2953
 Automatic Frequency Control: 2769
 Beacon: 2822
 Beating Oscillators: 2942, 2953
 Crystal Converters: 2769
 Design: 2769
 Intermediate-Frequency Amplifier: 2769, 2906
 Design: 2906

Radar (Cont'd.)
 Local-Oscillator: 2769
 Noise Figure: 2769
 Reflex-Klystron Oscillators: 2942, 2953
 Reflections from Lower Atmosphere: 2788
 Submarine: 2821
 Systems: 2822
 Beacon: 2822
 Targets: 2907
 Detectability: 2907
 Discriminability: 2907
 Test Equipment: 2767
 Airborne: 2767
 Time Demodulation: 2879
 Time Modulation: 2878
 Transmit-Receive Switches: 2769, 2918
 Hybrid Circuits: 2918
 Transmitters: 2822
 Beacon: 2822
 Types: 2749
 Vacuum Tubes: 2764, 2942, 2953
 Reflex Klystron: 2942, 2953
 Multifrequency Bunching: 2953
 Video Delay Lines: 2968
 Radio Control: 2793
 Radiography: 2801
 High-Speed: 2801
 Receivers: 2750, 2765, 2777, 2867, 2876, 2902, 2906, 2942, 2953
 Amplitude Limiting: 2876
 Effect on Noise: 2876
 Beating Oscillators: 2942, 2953
 Reflex Klystron: 2942, 2953
 Broadcast: 2867
 Frequency Modulation: 2867
 Intermediate-Frequency Amplifiers: 2867
 Communications: 2750
 Converters: 2902
 Microwave: 2902
 Wide-Band: 2902
 Point-Contact: 2902
 Silicon: 2902
 Fluctuation Noise: 2876
 Frequency Modulation: 2867
 Frequency Selectivity: 2876
 Effect on Noise: 2876
 Impulse Noise: 2876
 Intermediate-Frequency Amplifiers: 2867, 2906
 Frequency Modulation: 2867
 Radar: 2906
 Naval: 2750
 Communications: 2750
 Ultra-High-Frequency: 2750
 Noise Performance: 2876
 Amplitude Limiting: 2876
 Frequency Selectivity: 2876
 Radar: 2906, 2942, 2953
 Beating Oscillators: 2942, 2953
 Reflex Klystron: 2942, 2953
 Intermediate-Frequency Amplifiers: 2906
 Selectivity: 2876
 Frequency: 2876
 Effect on Noise: 2876
 Sensitivity: 2765
 High-Frequency: 2765
 Measurement: 2765
 Specification: 2765
 Reciprocity Theorem: 2918
 Hybrid Circuits: 2918
 Recording: 2881, 2897, 2933, 2966, 2967
 Advance Ball: 2933
 Air Dashpot: 2933
 Bounce: 2933
 Cutting Force: 2933
 Disk: 2897, 2933
 Distortion: 2897
 Intermodulation: 2897

Recording (Cont'd.)
 Magnetic: 2967
 Heads: 2967
 Field Measurements: 2967
 Lacquer: 2933
 Stylus-Tip Force: 2933
 Vacuum-Tube Transducer: 2966
 Sky-Wave Signals: 2881
 Broadcast Stations: 2881
 Rectifiers: 2753, 2758, 2759
 Copper-Oxide: 2753, 2759
 Crystal: 2753, 2759
 Noise: 2758
 Thermionic: 2753
 Voltage-Doubling: 2753
 Reflectors: 2889
 Microwave: 2889
 Reflectors, Electron: 2830
 Reflex Klystrons: 2756, 2795, 2942, 2953
 Beating Oscillators: 2942
 Bunching: 2953
 Multifrequency: 2953
 Efficiency: 2756
 Reflex Oscillators: 2731, 2758
 Refractive Index: 2904
 Tropospheric Layers: 2904
 Regulator Tubes: 2784
 Voltage: 2784
 Characteristics: 2784
 Relay Links: 2728, 2777, 2988
 Microwave: 2728
 Multichannel: 2728
 Multichannel: 2728
 Repeaters: 2908
 Testing: 2908
 Circulated-Pulse Method: 2908
 Repeaters: 2908
 Testing: 2908
 Circulated-Pulse Method: 2908
 Research: 2893
 United States Navy: 2893
 Electronic Research: 2893
 Resonators: 2771, 2777, 2783, 2849, 2890, 2921
 Analysis: 2771, 2783
 Circle Diagrams: 2771, 2783
 Design Charts: 2849
 Equivalent Circuit: 2890
 Filter Elements: 2921
 Measurements: 2771, 2783
 Resonator: 2764
 Ridge Wave guide: 2830
 Rieke Diagram: 2795
 "Rising-Sun" Magnetron: 2795
 Rosa Inductance Calculation: 2834
 Nomogram: 2834

S

"S"-Band Attenuator: 2752
 Sections, I.R.E.: 2844
 Test for Success: 2844
 Selective Demodulation: 2796
 Servomechanisms: 2741, 2827, 2952
 Automatic Frequency Control: 2827
 Performance Studies: 2952
 Inverse Nyquist Diagram: 2952
 Servomotors: 2793
 Signal Corps: 2728, 2764
 Microwave Relay: 2728
 Vacuum Tubes: 2764
 Signal Generators: 2895
 Microwave: 2895
 Wide-Range: 2895
 Ultra-High-Frequency: 2895
 Wide-Range: 2895
 Slot Antennas: 2947
 Sound (see "Audio Frequencies")
 Space-Charge Effects: 2914
 Microwave Tetrodes: 2914

Space-Current Division: 2773
 In Tetrodes: 2773
 Speakers (see Loudspeakers)
 Spectrum Allocation: 2799
 Spectrum Analyzers: 2884
 Double-Heterodyne: 2884
 Wide-Range: 2884
 Spectrum, Modulation: 2808
 Amplitude: 2808
 Frequency: 2808
 Speech: 2855
 Articulation Index: 2855
 Communication Systems: 2855
 Design: 2855
 Hearing: 2855
 Intelligibility: 2855
 Orthotelephonic Gain: 2855
 Spectra: 2855
 Speed Measurements: 2932
 Doppler Effect: 2932
 Sporadic-E Layer: 2786
 Squirrel-Cage Magnetron: 2772
 Step Response: 2740
 Strapped Magnetron: 2795
 Stylus-Tip Force: 2933
 Lacquer-Disk Recording: 2933
 Submarine Warfare: 2821
 Communications: 2821
 Electronics: 2821
 Summer: 2937
 Magnetic Amplifier: 2937
 Synchronization: 2941
 Oscillator: 2941

T

Tapered Transmission Lines: 2798
 Technical Audit: 2800
 Technical Papers: 2833
 Presentation: 2833
 Television: 2729, 2761, 2777, 2846, 2851, 2852, 2853, 2880, 2913, 2915, 2934, 2949, 2962, 2968
 Amplifiers: 2729
 Intermediate-Frequency: 2729
 Capacitance-Coupled: 2729
 Antennas: 2949
 Circularly Polarized: 2949
 Helical: 2949
 Camera: 2962
 Portable: 2962
 Coaxial-Cable Networks: 2934
 Color: 2851, 2852, 2853
 Sequential: 2851
 Simultaneous: 2851, 2852, 2853
 Deflection Circuits: 2846
 Magnetic: 2846
 Dichroic Mirrors: 2852
 Eddy-Current Loss: 2761
 Noise: 2761
 Random Noise: 2761
 Sine-Wave Noise: 2761
 Transformer Loss (Noise): 2761
 Iconoscope: 2913
 Video Storage: 2913
 Secondary Emission: 2913
 Field Pickup: 2962
 Image Orthicon: 2915, 2962
 Electron Paths: 2915
 Kinescopes: 2846
 Magnetic Deflection: 2846
 Mosaics: 2913
 Video Storage: 2913
 Secondary Emission
 Orthicon: 2915
 Electron Paths: 2915
 Pickup Tubes: 2915
 Electron Paths: 2915
 Pulse Modulation: 2880
 Lengtheners: 2880

Television (Cont'd.)
 Pulse Lengthener: 2880
 Relay Networks: 2934
 Coaxial-Cable: 2934
 Sequential Color: 2851
 Simultaneous Color: 2851, 2852, 2853
 Storage Tube: 2913
 Secondary Emission: 2913
 Video Storage: 2913
 Sweep Circuits: 2846
 Sweep Distortion: 2846
 Sweep Generators: 2846
 Synchronization: 2912
 Wave-Form Generation: 2912
 Cyclophon: 2912
 Trinoscope: 2853
 Vacuum Tubes: 2915
 Electron Paths: 2915
 Video Delay Lines: 2968
 Video Storage: 2913
 Secondary Emission: 2913
 Thermistor: 2742
 Thyatron: 2764
 Time Demodulation: 2879
 Time Modulation: 2878
 Top-Loaded Antenna: 2877
 Performance: 2877
 Trajectory, Electron: 2830
 Transadmittance: 2911
 Disk-Seal Tubes: 2911
 Transducers: 2890, 2966
 Recording: 2966
 Vacuum-Tube: 2966
 Resonators: 2980
 Equivalent Circuit: 2890
 Transformers: 2867, 2869, 2883, 2898, 2910, 2937
 Antenna Coupling: 2869
 Loop: 2869
 "Balun": 2898
 Intermediate Frequency: 2867
 Frequency Modulation: 2867
 Iron Core: 2883
 High-Frequency Excitation: 2883
 Loss: 2883
 Loop Coupling: 2869
 Microwave: 2898
 "Balun": 2898
 Balanced-to-Unbalanced Line: 2898
 Nonlinear: 2937
 Magnetic Amplifier: 2937
 Pulse: 2910
 Transient Analysis: 2910
 Virtual Displacements: 2910
 Transient Analysis: 2910
 Transition Time: 2740
 Filter Networks: 2740
 Transit Time: 2720, 2830
 Class-C Operation: 2720
 Phase-Delay Angle: 2720
 Reactance: 2720
 "Frequency Pushing": 2720
 Ultra-High-Frequency: 2720
 Class-C Operation: 2720
 Transit-Time Effects: 2914
 Microwave Tetrodes: 2914
 Transmission Lines: 2742, 2771, 2777, 2783, 2790, 2798, 2918, 2919, 2898, 2951, 2967
 Circle Diagrams: 2771, 2783
 Coaxial: 2951, 2968
 Delay: 2968
 Phase Discontinuities: 2951
 Delay: 2968
 Directional Couplers: 2919
 Exponential: 2798
 Four-Wire Line: 2798
 Straight Conductors: 2798
 Hybrid Circuits: 2918
 Impedance Measurement: 2790

Transmission Lines (Cont'd.)
 Matching Transformer: 2742, 2898
 "Balun": 2898
 Balanced-to-Unbalanced Line: 2898
 Stub-Tuned: 2742
 Measurements: 2771, 2783, 2790
 Damping: 2790
 Impedance: 2790
 Phase Shift: 2790
 Video Delay: 2968
 Transmit-Receive Switches: 2764, 2918
 Hybrid Circuits: 2918
 Traveling-Wave Magnetron: 2795
 Traveling-Wave Tubes: 2734, 2735, 2736
 Tridipole Antennas: 2782
 Trigger Circuit: 2878
 Trinoscope: 2853
 Tuning Indicators: 2900
 Frequency Modulation: 2900

 U
 Ultra-High Frequencies: 2737, 2750, 2807, 2884, 2895, 2899, 2904, 2936, (see also "Microwaves")
 Amplifiers: 2936
 Power: 2936
 Wide-Band: 2936
 Measurements: 2895
 Signal Generators: 2895
 Wide-Range: 2895
 Ranges: 2737
 Co-Channel Interference-Limited: 2737
 Noise-Limited: 2737
 Receivers: 2750
 Communications: 2750
 Design: 2750
 Naval: 2750
 Signal Generators: 2895
 Wide-Range: 2895
 Spectrum Analyzers: 2884
 Double-Heterodyne: 2884
 Wide-Range: 2884
 Vacuum Tubes: 2899
 Electrode Dissipation: 2899
 Wave Propagation: 2807, 2904
 Tropospheric: 2807, 2904
 Index of Refraction: 2807, 2904
 United States Army: 2728
 Microwave Relay: 2728
 United States Navy: 2750, 2893
 Office of Naval Research: 2893
 Electronic Research: 2893
 Receivers: 2750
 Communications: 2750
 Design: 2750
 Ultra-High-Frequency: 2750
 Very-High-Frequency: 2750
 Universal Winding: 2965
 Ordinary: 2965
 Progressive: 2965

V
 Vacuum Tubes: 2718, 2720, 2731, 2734, 2735, 2736, 2756, 2758, 2764, 2772, 2773, 2777, 2781, 2784, 2785, 2787, 2795, 2797, 2801, 2804, 2805, 2806, 2830, 2854, 2872, 2885, 2886, 2899, 2900, 2911, 2912, 2913, 2914, 2915, 2942, 2953, 2966
 Admittance Matching: 2887
 Wave-Guide: 2887
 Irises: 2887
 Broad-Band: 2887
 Amplification Factor: 2785
 Amplifiers: 2734, 2735, 2736, 2797, 2872
 Cathode-Follower: 2797
 Conductance: 2797
 Input Admittance: 2797
 Susceptance: 2797
 Graphical Analysis: 2872
 Cathode-Degenerated: 2872

Vacuum Tubes (Cont'd.)
 Cathode-Follower: 2872
 Traveling-Wave: 2734, 2735, 2736
 Beam-Type: 2734, 2735, 2736
 Traveling-Wave: 2734, 2735, 2736
 Cathode-Ray Tubes: 2764
 Cold-Cathode X-Ray: 2802
 Commutator: 2912
 Cathode-Ray Oscilloscope: 2912
 Radial: 2912
 Construction: 2764
 Co-planar: 2764
 Cyclophon: 2912
 Development: 2764
 Disk-Seal: 2781, 2911
 Input Conductance: 2911
 Transadmittance: 2911
 Donutron: 2772
 Electrode Dissipation: 2899
 Ultra-High Frequencies: 2899
 Electronic Switching: 2912
 Electron Multipliers: 2882
 Magnetic: 2885
 Gain: 2885
 Frequency Variation: 2885
 Electron Paths: 2915
 Electron Reflectors: 2830
 Quadratic Axial Potential Distribution: 2830
 Electron-Ray: 2900
 Tuning Indicator: 2900
 Electron Trajectory: 2830
 Field-Emission Arc: 2802
 Frequency Modulator: 2718
 Gas Tubes: 2764, 2854
 Noise Generators: 2854
 Heating Element: 2787
 High-Speed X-Ray: 2802
 Hot-Cathode X-Ray: 2802
 Iconoscopes: 2913
 Video Storage: 2913
 Secondary Emission: 2913
 Image Orthicon: 2915
 Electron Paths: 2915
 Indicator Tubes: 2764
 Input Admittance: 2797
 Cathode Followers: 2797
 Input Conductance: 2911
 Disk-Seal Tubes: 2911
 Irises: 2887
 Wave Guide: 2887
 Admittance Matching: 2887
 Broad-Band: 2887
 Klystrons, 2756, 2764, 2942, 2953
 Buncher, 2886
 Grid Spacing: 2886
 Reflex: 2756, 2942, 2953
 Efficiency: 2756
 Multifrequency Bunching: 2953
 Transit-Time Effect: 2886
 Lighthouse: 2781, 2911
 Input Conductance: 2911
 Transadmittance: 2911
 Magnetrons: 2764, 2772, 2804, 2805, 2806
 Donutron: 2772
 Frequency-Modulated: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806
 Negative-Grid Control: 2804, 2805, 2806
 Frequency Stabilized: 2804, 2805, 2806
 Electron-Beam: 2804, 2805, 2806
 Negative-Grid Control: 2804, 2805, 2806
 Squirrel-Cage: 2772
 Tunable: 2772
 Microwave: 2734, 2735, 2736, 2756, 2758, 2764, 2772, 2781, 2795, 2804, 2805, 2806, 2887, 2899, 2911, 2914, 2942, 2953
 Orthicon: 2915
 Electron Paths: 2915

Vacuum Tubes (Cont'd.)
 Pickup: 2915, 2966
 Electron Paths: 2915
 Receiving Tubes: 2764
 Reflex: 2758
 Velocity-Modulated: 2758
 Reflex-Klystron: 2756, 2942, 2953
 Efficiency: 2756
 Resnatrons: 2764
 Space-Charge Effects: 2914
 Microwave Tetrodes: 2914
 Switching, Electronic: 2912
 Tetrodes: 2914
 Disk-Seal: 2914
 Input Conductance: 2914
 Transadmittance: 2914
 Transit-Time Effects: 2914
 Klystrons: 2886
 Microwave Tetrodes: 2914
 Velocity-Modulated: 2758
 Wide-Band: 2734, 2735, 2736
 Traveling-Wave: 2734, 2735, 2736
 Oscillators: 2731, 2758, 2781, 2942, 2953
 Disk-Seal Tube: 2781
 Microwave: 2781
 Reflex: 2731, 2758
 Velocity-Modulated: 2758
 Reflex Klystron: 2942, 2953
 Multifrequency Bunching: 2953
 Velocity-Modulated: 2758
 Velocity-Variation: 2731
 Wide-Tuning-Range: 2731
 Microwave: 2731
 Phase Modulator: 2718
 Phasitron: 2718
 Pickup Tubes: 2764
 Planar Tubes: 2764
 Power: 2773
 Tetrodes: 2773
 Space-Current Division: 2773
 Power Tubes: 2764
 Radiographic: 2801
 Reflex Klystron: 2942, 2953
 Reflex Oscillator: 2758
 Velocity-Modulated: 2758
 Regulator: 2784
 Characteristics: 2784
 Resnatrons: 2764
 Retarding Field: 2830
 Space-Current Division: 2773
 Squirrel-Cage Magnetron: 2772
 Tetrodes: 2773
 Power: 2773
 Space-Current Division: 2773
 Thyratrons: 2764
 Transadmittance: 2911
 Transducer: 2966
 Recording: 2966
 Transit Time: 2720, 2830
 Class-C Operation: 2720
 Transmit-Receive: 2764
 Traveling-Wave: 2734, 2735, 2736
 Triodes: 2911
 Lighthouse: 2911
 Input Conductance: 2911
 Transadmittance: 2911
 Tunable Magnetron: 2772
 Tuning Indicator: 2900
 Electron-Ray: 2900
 Velocity-Modulated Oscillator: 2758
 Voltage Regulator: 2784
 Characteristics: 2784
 War Types: 2764
 Wide-Band: 2734, 2735, 2736
 X-Ray: 2801
 Vehicular Communication: 2777
 Velocity-Modulated Oscillator: 2758
 Velocity-Variation Oscillator: 2731, 2795
 Vertical Antennas: 2877, 2935
 Mutual Impedance: 2935

Vertical Antennas (Cont'd.)
 Unequal Heights: 2935
 Performance: 2877
 Very-High Frequencies: 2737, 2738, 2750, 2807, 2884, 2904, 2944
 Propagation: 2807
 Refraction: 2807
 Tropospheric: 2807
 Ranges: 2737, 2738
 Co-Channel Interference-Limited: 2737
 Noise-Limited: 2737
 Receivers: 2750
 Communications: 2750
 Naval: 2750
 Spectrum Analyzers: 2884
 Double-Heterodyne: 2884
 Wide-Range: 2884
 Wave Propagation: 2904, 2944
 Tropospheric: 2904, 2944
 Index of Refraction: 2904
 Meteorological Conditions: 2944
 Video Delay Lines: 2968
 Virtual Displacements: 2910
 Transient Analysis: 2910
 Voltage Doublers: 2753
 Voltage-Regulator Tubes: 2784
 Characteristics: 2784
 Voltmeter: 2751
 Automatic Slideback: 2751
 Peak-Measuring: 2751
 Peak-Measuring: 2751

W

Wattmeter: 2791, 2848
 Bolometer: 2791
 Calorimeter: 2848
 Ultra-High-Frequency: 2848
 Coaxial Load: 2848
 Water-Filled Line: 2848
 Wave Guides: 2759, 2771, 2777, 2782, 2783, 2830, 2887, 2890, 2910, 2918, 2919, 2950
 Admittance Matching: 2887
 Irises: 2887
 Broad-Band: 2887
 Analysis: 2771: 2783
 Antennas: 2782
 Omnidirectional: 2782
 Circle Diagrams: 2771, 2783
 Corner Bend: 2920
 Equivalent Circuit: 2920
 Directional Couplers: 2919
 Hybrid Circuits: 2918
 Irises: 2887
 Broad-Band: 2887
 Admittance-Matching: 2887
 Junctions: 2759
 To Coaxial: 2759
 Broad-Band: 2759
 Measurements: 2771, 2783
 Phase Changer: 2950
 Differential Phase-Shift Section: 2950
 Rectangular: 2830
 Ridge: 2830
 Transducers: 2890
 Equivalent Circuit: 2980
 Wavemeters: 2868, 2871
 Calibration: 2871
 Coaxial-Line: 2868
 Microwave: 2871
 Calibration: 2871
 Wave Propagation: 2737, 2738, 2757, 2762, 2770, 2777, 2780, 2786, 2788, 2807, 2856, 2881, 2893, 2894, 2904, 2905, 2944
 Atmosphere, Reflections from: 2788
 Atmospheric Absorption: 2894
 Atmospheric Refraction: 2894
 Attenuation: 2770
 Through Rain: 2770
 Broadcast: 2881
 Sky-Wave Signals: 2881

Wave Propagation (Cont'd.)
 Recording: 2881
 Duct: 2780, 2856, 2894
 Low-Level: 2780
 Low Ocean: 2856
 Electronic Collisional Frequency: 2757
 Field Intensity: 2737, 2738
 Very-High-Frequency: 2737, 2738
 Free-Space: 2894
 Ground-Wave: 2894
 Ionosphere: 2757, 2905
 Electron Distribution: 2905
 Electronic Collisional Frequency: 2757
 Virtual Height: 2905
 Line-of-Sight: 2894
 Meteorological Conditions: 2944
 Microwave: 2780, 2807, 2856, 2894
 Duct: 2780, 2856
 Low-Level: 2780
 Over Ocean: 2780
 Refraction: 2780
 Wind Effects: 2807
 Navigation: 2762
 Error: 2762
 Over Ocean: 2856
 Duct: 2856
 Radar Reflections: 2788
 From Lower Atmosphere: 2788
 Rain, Effect on: 2770
 1.25 Centimeter Waves: 2770
 Ranges: 2737
 Co-Channel Interference-Limited: 2737
 Noise-Limited: 2737
 Recording: 2881
 Sky-Wave Signals: 2881
 Reflections, Atmospheric: 2788
 Refraction: 2894
 Research: 2893
 Office of Naval Research: 2893
 Sky-Wave Signals: 2881
 Recording: 2881
 Smooth-Earth Theory: 2894
 Sporadic-E Layer: 2786
 Tropospheric: 2708, 2894, 2904, 2944
 Beyond Horizon: 2807
 Beyond Line-of-Sight: 2807
 Index of Refraction: 2904
 Gradients: 2904
 Meteorological Conditions: 2944
 Refraction: 2807
 Ultra-High-Frequency: 2737, 2807, 2894
 Refraction: 2807
 Signal Ranges: 2737
 Very-High-Frequency: 2737, 2708, 2894, 2944
 Field Intensity: 2737, 2738
 Meteorological Conditions: 2944
 Refraction: 2807
 Signal Range: 2737, 2738
 Tropospheric Reception: 2944
 Meteorological Conditions: 2944
 Wave Selector: 2919
 Waves: 2717
 Radar: 2717
 Wide-Band Amplifiers: 2729
 Capacitance-Coupled: 2729
 Wide-Band Tubes: 2734, 2735, 2736
 Traveling-Wave Tubes: 2734, 2735, 2736
 Winding: 2965
 Coils: 2965
 Universal: 2965

X

X-Rays: 2755, 2801
 High-Intensity: 2755
 High-Speed: 2801
 Long-Wavelength: 2755
 1-Millionth-Second Radiography: 2801
 Source: 2755

NONTECHNICAL INDEX

Awards

- BROWDER J. THOMPSON MEMORIAL PRIZE—
1946 (Recipient)
Dolph, Charles L.
April, p. 382
May, p. 501
- CANADIAN CIVIL SERVICE MEDAL—1947
(Recipients)
Rush, Walter A., and Workers of the Radio Branch of the National Research Council
February, p. 190
- MORRIS LIEBMAN MEMORIAL PRIZE—1947
(Recipients)
Pierce, John R.
April, p. 382
May, p. 500
Rose, Albert T.
April, p. 382
May, p. 500
- FELLOW AWARDS—1947 (Recipients)
Adair, George P.
April, p. 382
Bayly, Benjamin de F.
April, p. 382
Beers, George L.
April, p. 382
Berkner, Lloyd V.
April, p. 382
Bowles, Edward L.
April, p. 383
Burnap, Robert S.
April, p. 383
Field, Robert F.
April, p. 383
Fink, Donald G.
April, p. 383
Hansen, William W.
April, p. 383
Hull, David R.
April, p. 383
Hunt, Fred V.
April, p. 383
Jansky, Karl G.
April, p. 384
Kell, Ray D.
April, p. 384
Litton, Charles V.
April, p. 384
McRae, James W.
April, p. 384
Mouromtseff, Ilia E.
April, p. 384
Noble, Daniel Earl
April, p. 384
Noizeux, Pedro J.
April, p. 384
Page, Robert M.
April, p. 385
Pierce, John A.
April, p. 385
Pounsett, Frank H. R.
April, p. 385
Priest, Conan A.
April, p. 385
Salisbury, Winfield W.
April, p. 385
Watson-Watt, Sir Robert
April, p. 385
Wendell, Edward N.
April, p. 385

Committees

- Antennas
February, p. 184
- Appointments—Report
April, p. 394
- 1946 Awards of the Television Broadcasters Association, Inc.
January, p. 50
- Board of Directors
December, p. 1519
- Board of Editors
February, p. 184
- Circuits
February, p. 184
- Convention Policy
January, p. 50
- Editorial Administrative
January, p. 50
- Executive Committee Meeting
December, p. 1519
- Founders
January, p. 50
- Institute
July, pp. 702-704
October, p. 1112
- International Liaison
January, p. 50
- Meetings
February, p. 184
- Minutes of Technical Meetings
July, p. 699
- NAB and RMA
February, p. 191
- National Convention—1947
January, p. 50
- National Convention—1948
September, p. 939
- Navigational Aids
February, p. 184
- Nuclear Studies
September, p. 939
- Office Quarters
January, p. 50
- Piezoelectric Crystals
January, p. 50
- Planning
April, p. 394
- Professional Recognition
January, p. 50
- Research
February, p. 184
- RMA Activities
December, p. 1524
- RMA-Co-ordinating
January, p. 50
- RMA-I.R.E. Correlating
September, p. 945
- Standards
February, p. 184
- Technical Appointments
September, p. 939
- Television
February, p. 184

Constitution and Bylaws

- CONSTITUTION OF THE I.R.E.
Amended as of August 15
September, p. 940
- Constitutional Revision*
April, p. 381

- Proposed Constitutional Amendments*
Special Member Grade
July, p. 695

Conventions and Meetings

- Administration of Research Conference
December, p. 1520
- A.I.E.E. Pacific General Meeting
June, p. 587
- Army Signal Association
April, p. 394
- Broadcast Engineers Conference
July, p. 701
- Chicago I.R.E. Conference
March, p. 336
June, pp. 588-589
- Chicago Section Meeting
April, p. 389
- Connecticut Valley Section Annual Meeting
June, p. 587
- Electron-Tube Conference
May, p. 498
August, p. 798
- Georgia Radio Broadcast Engineering Institute
March, p. 336
- Inter-American Broadcasters' Congress
January, p. 50
- I.R.E. at International Telecommunications Conference
July, p. 699
- I.R.E. National Convention—1947
January, p. 49
- Committee Meetings
February, p. 184
- Program and Highlights
February, pp. 173-184
- Summaries of Technical Papers
February, pp. 173-184
May, pp. 499-502
- I.R.E.-U.R.S.I. Annual Meeting
March, p. 336
July, p. 700
- NAB Holds Engineering Conference and Roundtable
December, p. 1520
- National Electronics Conference
February, p. 192
August, p. 798
September, p. 945
- New England Radio Engineering Meeting
Cruft Laboratory (Illustration)
M.I.T. (Illustration)
March, p. 336
April, p. 386
- Report on New England Radio Engineering Meeting, May 17, 1947
August, p. 799
- Rochester Fall Meeting
February, p. 185
October, p. 1107
- Second Joint I.R.E.-U.R.S.I. Meeting
October, p. 1107
- SMPE Semiannual Convention
September, p. 945
- Spring Technical Conference Cincinnati Section I.R.E.
April, p. 389
- Report
August, p. 800
- Technical Session
February, p. 190

West Coast I.R.E. Convention

- July, p. 700
- Program
- August, pp. 796-797
- San Francisco Bay Bridge (Illustration)
- September, p. 942
- San Francisco
- December, p. 1520

Editorials

PROCEEDINGS

- Baker, Walter R. G.
 - A Message to the I.R.E. Membership from Its Board of Directors
 - October, p. 1003
- Clement, Lewis M.
 - Importance of Proper Engineering Organization to Industry
 - August, p. 755
- Downes, Arthur
 - Proper Presentation of Papers Before Technical Meetings
 - March, p. 235
- Hennacy, Keith
 - Twelve Good Men and True
 - July, p. 643
- Israel, Dorman D.
 - The Position of the Engineer in our Post-war Society
 - May, p. 443
- King, Robert W.
 - The Engineer and Science Legislation
 - April, p. 339
- Potts, John H.
 - Audio Aspects of Postwar Radio Engineering
 - December, p. 1404
- Roller, Duane
 - What's in a Technical Name
 - November, p. 1180
- Sarnoff, Brigadier General David
 - Radio's Contribution to International Understanding
 - February, p. 107
- Smith, H. F.
 - Radio Jargon
 - June, p. 547
- Stevens, S. S.
 - The Human Factor in Machine Operation
 - January, p. 2
- Terman, Frederick Emmons
 - Science Legislation and National Progress
 - September, p. 860

WAVES AND ELECTRONS

- Adair, George P.
 - Government and Industry
 - October, p. 1118
- Chamberlain, A. B.
 - Standards
 - September, p. 950
- Graf, Alois W.
 - Evolution
 - August, p. 808
- Knowles, David J.
 - Active Participation Versus Passive Activity
 - April, p. 398
- McKinley, D. W. R.
 - P.I.C.A.O. and the Radio Engineer
 - March, p. 294
- Mills, John
 - The Industrial Scientist as Citizen
 - June, p. 597
- Quarles, Lawrence R.
 - The Problem of a Scattered Membership
 - July, p. 711

- Sleeper, Milton B.
 - The Need for Clear Terminology
 - May, p. 508

Election of Officers

- National Electronics Conference Officers
- June, p. 587
- New I.R.E. Officers
- January, p. 50
- New RTPB Officers
- October, p. 1107
- Nominations—1948 for Board of Directors Officers
- July, p. 699

Front Covers

- Baker, W. R. G.
 - January
 - Complex Structure of Modern Higher-Frequency Tubes
 - New High-Power, Push-Pull Transmitting Tetrode with Total Plate Dissipation of 6000 Watts, for Television Transmission and
 - Frequency-Modulated L-Band Magnetron
 - April
- Denny, Charles R.
 - February
 - Development of Direction-Finding Equipment
 - Novel Forms and Arrangements Appear in Long-Term Engineering Studies
 - March
 - Electrolytic Simulation of Cathode-Ray-Tube Conditions
 - November
 - Electronic Timekeeper of High Precision
 - August
 - Electronic Traps to Snare Atomic Rays
 - September
- Gargantuan Tube-Test Rack
- December
- Lack, Frederick R.
 - February
- Llewellyn, F. B.
 - President, 1946
 - January
- Lockwood, Charles A., Jr.
 - February
 - Modern Frequency-Modulation Antenna Structure
 - May
 - Radio Laboratories Take to the Road
 - July
 - Telephone Service Takes to the Road
 - October
 - Television Synchronizing, Signal, and Control Equipment
 - (Courtesy of Los Angeles Section of Institute)
 - June

Frontispieces

PROCEEDINGS

- Ashbridge, Sir Noel
 - August, p. 754
- Baker, W. R. G.
 - January, p. 3
- Board of Directors
- April, 1947
- Brown, J. E.
 - June, p. 546
- Crosby, Murray G.
 - October, p. 1004
- de Forest, Lee
 - July, p. 642

- Edison, Thomas A.
 - February, p. 106
- Heising, Raymond A.
 - November, p. 1179
- Israel, Dorman D.
 - December, p. 1403
- Poppele, J. R.
 - September, p. 859
- Royden, George T.
 - March, p. 234
- Sections Representative at 1947 I.R.E. National Convention
- May, p. 442

WAVES AND ELECTRONS

- Cimorelli, Joseph T.
 - March, p. 293
- Graf, Alois W.
 - July, p. 710
- Hunter, Theodore A.
 - February, p. 193
- Keto, John E.
 - November, p. 1344
- Knowles, David J.
 - May, p. 507
- McKinley, Donald W. R.
 - April, p. 397
- Metz, Henry I.
 - October, p. 1117
- Quarles, Lawrence R.
 - June, p. 596
- Officers:
- Dallas-Fort Worth Section
- December, p. 1531
- Philadelphia Section
- August, p. 807
- Princeton Subsection
- September, p. 949
- St. Louis Section
- January, p. 56

Group Photographs

- Dr. Baker Presents the Browder J. Thompson Memorial Prize for 1946 to Dr. Charles L. Dolph
- May, p. 501
- Dr. Baker Receives Certificate of Appreciation from Brigadier General Calvert H. Arnold
- March, p. 289
- Dr. W. R. G. Baker, President of the I.R.E., Presents the Morris Liebmann Memorial Prize for 1946 to Dr. Albert Rose, and for 1947 to Dr. John R. Pierce
- May, p. 500
- Banquet of the New England Radio Engineering Meeting
- August, p. 799
- Broadcast Engineers Conference—six pictures of engineers attending conference
- July, p. 701
- Chairman and Speakers at the Afternoon Session of the Conferences—Spring Technical Conferences
- August, p. 800
- Chairman and Speakers at the Morning Session of the Cincinnati Spring Technical Conference
- August, p. 800
- Chicago I.R.E. Conference Committee Members
- June, p. 589
- Chicago I.R.E. Section Executive Committee Members
- June, p. 588

Steen, Jerome R., March, p. 291
 Stewart, Thomas E., Jr., December, p. 1527
 Stone, Ellery W., August, p. 804
 Sussman, Harry, April, p. 391
 Teasdale, Robert D., June, p. 590
 Terman, Frederick E., February, p. 187
 Trainer, Merrill A., June, p. 590
 Tuttle, W. N., January, p. 53
 Van Buren, John M., February, p. 187
 Watson-Watt, Sir Robert, April, p. 391
 Webster, Edward M., May, p. 504
 Weiss, Walter A., May, p. 504
 Wendell, E. N., September, p. 947
 Wensley, Roy, March, p. 290
 White, James F., August, p. 804
 Wiggins, A. M., August, p. 804
 Wyckoff, Harold O., April, p. 390
 Young, Louis McComas, January, p. 54
 Youngblood, I. J., May, p. 504
 Zworykin, Vladimir K., June, p. 590

Miscellaneous

Advanced Work at Stanford University
 August, p. 795
 Air Force Day, August 1, 1947, Announcement by Major General Harold M. McClelland
 August, p. 795
 Franklin Institute Receives New RCA Electron Microscope
 July, p. 700
 Industrial Engineering Notes
 September, pp. 942-943
 October, pp. 1108-1109
 International Congress Italian National Research Council
 June, p. 595
 Invitation to I.R.E. Members Active in "Nucleonics"
 January, p. 50
 NAB Engineering Clinic
 September, p. 939
 National Electronics Conference Officers
 June, p. 587
 N. E. C. Proceedings Available
 June, p. 587
 New Engineering Foundation Officers
 January, p. 50
 N.D.R.C. Propagation Summary Report
 September, p. 945

Patents, in the Public Domain
 April, p. 394
 Prospective Authors
 February, p. 191
 Reprints and Preprints Published by I.R.E.
 Radar by Edwin G. Schneider
 April, p. 395
 October, p. 1109
 Preparation and Publication of I.R.E. Papers by Helen M. Stote
 April, p. 395
 October, p. 1109
 The Presentation of Technical Developments before Professional Societies, by William L. Everitt
 April, p. 395
 October, p. 1109

Obituaries

Beal, Ralph S.
 April, p. 394
 Persio, Louis N.
 October, p. 1107

Report of the Secretary—1946

June, pp. 583-587

Representatives in College

July, p. 704
 October, p. 1114

Representatives on Other Bodies

February, p. 190
 April, p. 394
 May, p. 498
 August, p. 795
 September, p. 945

Sections

GEOGRAPHIC
 Cedar Rapids
 Report on New Procedure
 April, p. 389
 Emporium
 Summer Seminar
 October, p. 1110
 Louisville
 Formation Approved
 October, p. 1107

New Jersey
 Formation of Subsection
 December, p. 1520
 Princeton
 Petition for Sub-Section
 September, p. 939
 Sacramento
 Petition
 May, p. 498
 San Francisco
 Approval of Sacramento Section Petition
 August, p. 795
 Syracuse
 Recommendation for Approval
 April, p. 389
 MISCELLANEOUS
 Canadian Council
 April, p. 394
 Chairman and Secretaries
 January, pp. 54-55
 July, pp. 705-706
 September, p. 944
 October, p. 1115
 Section Officers Listing
 August, pp. 802-803

Standards—I.R.E.

Television Standard, "Standards on Television: Methods of Testing Television Transmitters—1947"
 June, p. 581

Write-Ups

Brigadier-General David Sarnoff Talks on "The Past and Future of Radio"
 May, p. 498
 Dr. W. R. G. Baker Talks on The Institute and the Industry at the Rochester Fall Meeting
 February, p. 192
 Popov Medal
 Information on Requirements for Winning This Medal, Entry Dates, etc.
 April, p. 394
 Radio Contributions to Airplane Guidance, Talk by W. L. Webb on "Toward Safe and Automatic Flight"
 February, p. 191